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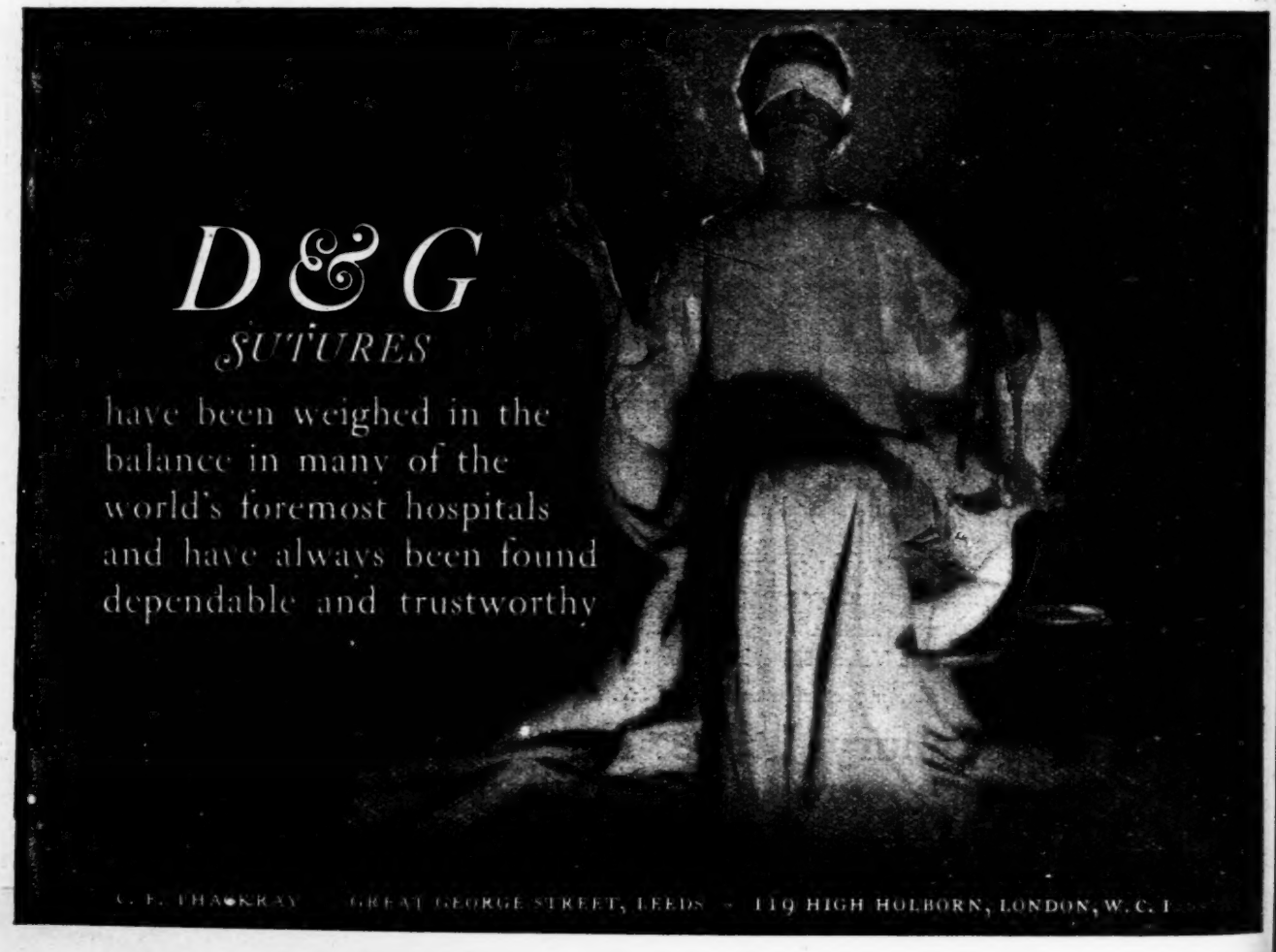
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An Address
ON
SLEEP AND SLEEPLESSNESS.

DELIVERED BEFORE THE OXFORD MEDICAL SOCIETY

BY

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(*Abridged.*)

IF sleep has more often provided a theme for the poet than for the physiologist the reason is not far to seek, for it contains enough mystery yet to give play to roaming fancy. For most of us there is something so inevitably right in the nightly respite from mental activity that we do not pause to consider its meaning until perhaps one night its lulling charities fail us. Then we are brought face to face with problems still, many of them, awaiting solution. What do we know of sleep in terms of physiology? How far can that knowledge help us in the treatment of insomnia?

PHYSIOLOGY.

Actually the physiologists have not been idle; the fact that their conclusions on the whole have been of negative value is a fair measure of the difficulty and complexity of the problem. The essence of sleep is in the central nervous system, and consists of a complete cessation of conscious activity together with a greatly diminished capacity to react to environmental stimuli. With this are associated certain phenomena in the other bodily systems, and these, because they are more readily available for study, have chiefly engaged the physiologists' attention. The result has been a tendency to lose sight of the central fact, and to attempt to explain this in terms of the associated phenomena.

A theory of sleep which has obtained some credence is based upon the observation that in the sleeping state there is a fall of blood pressure and a diminution of the pulse rate. The suggestion is that at the end of the day the vaso-constrictor centre becomes fatigued. The systemic arterioles dilate, the blood pressure falls, the supply of arterial blood to the brain drops below the point necessary to maintain the activity of the cortical nerve cells, and sleep therefore supervenes. In support of this theory it has been adduced that in animals and in man pallor of the cerebral cortex may be observed at the onset of sleep, but there is so much conflicting evidence upon this point that it cannot be taken as a basis for argument.

Against the theory stand observations which show that in man the nocturnal fall of blood pressure and pulse rate occur independently of the sleeping state. Thus a man lying awake at night has a lower blood pressure than one asleep during the day.

There are, however, more serious objections to all theories of sleep based upon the idea of cerebral anaemia. It is true that cerebral anaemia, as from a severe haemorrhage, may lead to stupor, but is this directly comparable with sleep? I think not. A fundamental feature of true sleep is its restorative effect upon the higher mental faculties, an effect which is completely lacking in clinical experience of such anaemias; as, indeed, might be expected, seeing that the cerebral cortex is the most highly specialized of all tissues, and would naturally, therefore, require during the restorative sleep period a maximal rather than a minimal share of the cleansing stream.

The body temperature shows a diurnal rhythm similar to that of the blood pressure. In a person accustomed to nocturnal sleep it reaches its minimum at about 3 a.m., and this nocturnal fall persists even if the subject of investigation is awake and active. If he changes his habit and sleeps regularly by day instead of night, gradually the temperature curve is reversed, and at the end of about six weeks the reversal is complete, so that the fall is diurnal. If now the subject returns again to the habit of nocturnal sleep, the temperature rhythm is gradually readjusted, taking about six weeks to regain the normal swing.

It appears, then, that the habit of going to sleep for a particular period of the twenty-four hours, if persisted in long enough, will initiate a corresponding periodicity or rhythm in certain bodily systems, and that this rhythm once established tends to persist on its own account independently of the sleeping state.

The diverse functions involved, and the tendency to persistence of the rhythm once established, make it extremely probable that these associated phenomena depend upon reflex centres established at a comparatively low level in the central nervous system. The effective stimulus to these centres is a combination of many conditions, of which sleep is the most important, the others being of the order of light, temperature, noise, and so on. Even in the absence of sleep, at first the other conditions are adequate to set the reflex in motion—just as, even in the absence of food, the ringing of the bell will cause a secretion of saliva in a dog accustomed by previous experience to bell and food in combination. The physiological changes which result doubtless have an effect in facilitating the regular onset of sleep for a fixed period of the twenty-four hours. The man who is transferred from day to night duty is at first still inclined to be wakeful by day and sleepy at his former bedtime.

The condition of sleep closely resembles those pathological conditions known to us as stupor or coma (according to their depth) caused by the cerebral anaemia resulting from compression of the brain, or by the action of various poisons upon the nerve cells (for example, uraemic and diabetic coma). There are, however, certain features which serve to distinguish natural sleep from pathological stupor:

1. The effect of sleep is restorative, in contrast with that of pathological stupor, from which the patient emerges in a dazed condition, with mental faculties dulled.
2. The onset of sleep is relatively rapid.
3. The awakening from sleep also is a rapid process as compared with the recovery from stupor.
4. There exists in the healthy person a remarkable ability to select by experience certain stimuli for which the threshold is relatively lowered so that they rapidly result in waking, whilst for other stimuli of equal or greater volume and intensity the threshold may be relatively raised. The most striking example in my own experience has been that of learning to sleep soundly in a shallow dug-out behind which an 18-pounder field gun was firing at frequent but irregular intervals, whilst, on the other hand, the shriek of an approaching shell at dangerous proximity would bring me in an instant to the full possession of my faculties.

Of the commoner and more homely examples one may take the ability gradually acquired by the child to respond to the stimulus of a full bladder, or that of the mother waking on the instant to her infant's cry. Such habits of conditioned awakening may be gained or lost after quite brief experience. Thus it is easy enough for some persons, and in some circumstances, to make the sound of the alarm clock a condition for a hasty leap out of bed; while for others, or in other circumstances, the same stimulus after a moment's waking may act as a profound soporific.

Less striking, but very important, as I shall hope to show in dealing with insomnia, are the conditioned stimuli which may be used to induce the sleeping state.

THE NATURE OF SLEEP.

From these observations I believe we may draw some conclusions as to the nature of sleep. The rapid onset and rapid awakening, and especially the capacity to graft conditioned stimuli upon the acts of sleeping and waking, suggest a reflex mechanism. The notion of a reflex centre presiding over sleep has been long entertained by physiologists.

A reflex centre implies an afferent and an efferent pathway with a receptor mechanism at the one end and effector at the other. The effector mechanism in this case must be one of inhibition. Inhibition of what? Certainly inhibition of the function of conscious mental activity, and therefore of cortical activity. It appears likely that this inhibition

is achieved by a blocking of the pathways along which afferent impulses are normally streaming to excite the cortical cells. Such inhibition of afferent impulses at a stage lower than consciousness is, of course, well known. The simplest instance, perhaps, is that of the child with congenital strabismus who has learned to use either eye alternately but is incapable of binocular fusion. Given an apparatus by which the image of a bird is thrown upon one retina and that of a cage upon the other in such a way that the normal person sees the bird in the cage, the alternator sees *either* bird *or* cage—never both together; the reception of one image reflexly inhibits that of the other. In some such way we may suppose that the sleep centre, under adequate stimulation, cuts off afferent impulses from the cortical cells until they, from lack of stimuli, become inactive—inactive, that is, so far as the anabolic phase is concerned; during sleep, we have good reason to suppose, the phase of anabolism leads to restoration of their functions.

Such a conception of sleep as due to a cutting off of the cortical cells from stimuli is not only in accord with the rapidity of onset and awakening and the restorative effect of the sleeping state, but provides an explanation for the difference between sleep and stupor.

The resemblance between these two conditions is due to the cessation in both of cortical (conscious) activity. In stupor this is due to a direct effect upon the cortical cells, whose function is impaired owing to lack of oxygen or the action of poisons. There is, therefore, not only loss of consciousness but loss of potential consciousness. In sleep, on the other hand, the cortical cells are only inactive because they are protected from stimulation; consciousness is lost but potential consciousness is unimpaired. This difference has an important bearing upon the use of narcotics.

So far we have been considering only the efferent side of the postulated reflex arc. On the afferent side the adequate stimulus is probably a fatigued state of the cortical cells themselves, which is usually associated with a sense of weariness and the desire for sleep. This leads normally to a series of voluntary actions directed to the elimination of external or internal stimuli. Of these actions the most important is the assumption of the resting posture in which the muscles are relaxed and proprioceptive stimuli from them and from the joints are reduced to a minimum. Other measures, such as withdrawal from light and noise, are of secondary importance, but may acquire an additional value as conditioned stimuli. In fact, a great variety of conditioned stimuli may be developed which in proper sequence and combination facilitate the sleeping reflex. On the other hand, the association with the pre-sleep period of unwonted stimuli may serve to prevent the development of the reflex.

As to the localization of this hypothetical sleep centre, it has been suggested that it lies either in the walls or floor of the third ventricle or lower down in relation to the Sylvian aqueduct. The evidence adduced is the frequent association of pathological drowsiness with lesions in this neighbourhood.

A Classification of Insomnia.

As a provisional classification of the insomnias I would suggest the following:

A. *Insomnia due to Disease directly involving the Sleep Centre:* The classical example is in certain cases of encephalitis lethargica.

B. *Insomnia due to Overexcitability of the Cortical Nerve Cells as the Result of Intoxication or Anaemia.*—This is seen in the course of many infections, in the preliminary stages of uraemia, lead poisoning, etc., and in minor degrees of cerebral compression, as from cerebral oedema after a head injury.

C. *Insomnia resulting from the Presence of Unwonted Stimuli which Inhibit the Sleep Reflex.*—This is the largest and most important group. There is a variety of stimuli which are able to withstand the reflex inhibition upon which sleep depends, to break through this barrier to the cortical cells, and to excite these to activity. Their power to achieve this depends (1) upon their intensity, (2) upon the degree to which the sleep reflex has been rendered prepotent, either by cortical fatigue or the strengthening effect of conditioned stimuli. The most familiar causes of this group are:

1. *Muscular Posture and Tension.*—It is impossible to sleep and remain sleeping in the standing posture. Even at the end of 115 hours' continuous insomnia, when the desire for sleep was imperative, Kleitman and his co-workers found that the onset of sleep could be prevented by moving about.

2. *Pain* (including discomfort, as, for instance, from irritation of the skin or extremes of temperature).

3. *Emotional Excitement.*—At this point it becomes extremely difficult to pursue my argument in physiological terms. We must recognize, however, that an emotion, whatever its physiological origin, is a potent stimulus to conscious activity, and chief among the emotions in this respect is fear.

The Treatment of Insomnia.

Drugs.

The essential feature of the sleeping state is inactivity of the cortical cells concerned with conscious activity. This is also the essential feature of toxic stupor. According to our theory, however, the distinction between the two states is that in sleep the cortical cells are inactive because they are shut off from afferent stimuli: in stupor their activity is abolished by the direct action upon them by a toxin. This bears an important relation to the use of narcotic drugs, whose action is also directly upon the cortical cells, and is, of course, toxic. It is possible with the aid of narcotics to induce stupor by paralysis of the cortex without endangering life, because the vital reflex centres are relatively immune to their action. It is possible thus to induce the semblance of sleep even against heavy odds in the shape of discomfort and anxiety.

But this is not the real thing: the restorative effect is lacking; and the patient therefore does not wake properly refreshed. You will remember in this connexion Othello's sleepless night after the seeds of suspicion had been planted in his mind, and Iago's greeting:

> "Not poppy, nor mandragora,
> Nor all the drowsy syrups of the world,
> Shall ever medicine thee to that sweet sleep
> Which thou ow'dst yesterday."—*Othello*, Act iii, Sc. 3.

No one, however, would deny that narcotics are of the greatest value in the treatment of insomnia. And this for two reasons: First, the toxic effect of insomnia upon the cortical nerve cells may be more severe than that produced by the drug. It is a well known fact that insomnia may lead to depression of the higher mental faculties, and eventually to coma and death. In the second place, small doses of narcotics often facilitate the onset of true sleep. I do not propose to go into detail of drugs and their doses. Bromide alone, or in combination with chloral; paraldehyde for a quick action; sulphonal for delayed effect; medinal as a useful all-round narcotic; the coal-tar analgesics and opium for pain or discomfort, comprise the therapeutic stock-in-trade.

Habit Formation.

Of the value of conditioned stimuli in facilitating sleep I have already spoken. Most of us have acquired a ritual of some kind—perhaps unconsciously—which stands us in good stead when sleep is threatened; it includes the whole business of undressing and getting into bed; the habit of reading in bed is often a part of it. For this reason I think that an invalid, whenever it is practicable, should sit up in a chair just before bedtime while his bed is made, so that he may not altogether miss the experience of going to bed.

Unfortunately, when sleeplessness has persisted for any length of time the old rituals lose their value, and may even facilitate insomnia. Then is the time to initiate new rites, beginning by moving the patient, if not into another house, at any rate into a fresh bedroom. The ritual may consist of some such sequence as the following: a warm bath, into bed, a cup of warm milk or an equivalent, then a solemn plugging of the ears with cotton-wool, perhaps five minutes' reading by the bedside lamp, and then lights out. The sleeping draught, if any is prescribed, may be taken before or with the warm drink. As a finishing touch, I recommend the repetition by heart of some soporific verse. Keats's Ode to Sleep, in my experience, is insurpassable in this respect. Such a ritual must be persevered in if it is to be efficacious.

Muscular Relaxation.

Sleep, as we have already observed, is incompatible with any great degree of muscular tension, and there are some individuals who are kept awake largely by their inability to relax their muscles. The tendency for the sleepless person being to toss and turn, it is important that he should learn that this in itself is fatal to sleep, and that the wisest plan is to lie perfectly still. Even though this may demand a certain amount of effort and self-control, it will often induce sleep.

The efficacy of this principle in treatment has been shown to me most clearly in certain cases of encephalitis lethargica in children, where motor restlessness has been the most prominent symptom of the insomnia. After the preliminary rites of warm bath, sleeping draught, and ear plugging, the child is tightly rolled in a long sheet which is fastened with safety-pins, the arms being included so that he is immobilized. The results in some cases have been striking—for instance, a sleep of nine hours with the pack, as compared with a maximum of four and a half hours when the other measures alone were employed.

Beyond this, there is an art in muscular relaxation, as anyone may prove by attempting to allow one of his limbs to be absolutely passive in the hands of another person. It is an art which patients can be taught to acquire limb by limb until they can themselves practise complete bodily relaxation. The soporific effect of this exercise is sometimes of great value; it may be taught by an instructed masseuse, and may be usefully included among the final stages of the bedtime ritual.

Details of Treatment.

The insomnia due to disease of the sleep centre, such as I believe occurs in encephalitis lethargica, is, in my experience, the most difficult of all to treat. In many cases, as the normal sleep time comes round, the cortex appears to pass into a condition of great overexcitement, and this occurs night after night for many weeks with the greatest regularity. It is tempting to believe that in these cases reflex inhibition has been converted by the disease into reflex excitation, and that the cortical cells are thus being abnormally bombarded with afferent stimuli. A combination of drugs and ritual, if persisted in for a long time, sometimes appears to be effective, and immobilization, as already described, is valuable in patients with great motor restlessness. But these cases are, on the whole, disappointing.

The toxic and infective group of insomnias should be treated on the same lines. Here the direct effect of the toxins upon the cortex is, as a rule, reinforced by sources of pain and discomfort. Opium therefore is the most useful drug, and, in cases which are likely to be of short duration, may be used freely. In the chronic cases small doses of medinal combined with aspirin are useful. It is in dealing with this group of cases, however, that it is most important to remember the poisonous nature of the narcotic drugs. The ritual therefore should be made use of as far as possible, and the dose of drugs kept low.

The third group of insomnias—that in which sleep is prevented by unwonted stimuli—offers most scope for treatment. Pain and discomfort must be treated by local measures, and, if necessary, with drugs—aspirin or opium. The treatment of muscular tension as a factor in insomnia has already been discussed.

We have finally to deal with emotional disturbance. The emotions which have most power to disturb sleep are naturally those which are painful. Paramount are fear and anxiety. We may further distinguish between the open and hidden emotion.

A. An emotion which is present to the waking mind—a declared worry with all its associated memories hinders the onset of sleep.

B. An emotion which has in the waking state been prevented from exciting conscious activity (that is, in the psychological sense, a repressed emotion) may cause insomnia in either or both of the following ways:

(1) Either the subject finds himself thinking furiously upon some indifferent subject in order to prevent the repressed worry from reaching consciousness, and so is unable to go to sleep; or

(2) He may go to sleep, but is awakened by the repressed emotion forcing its way into consciousness, often in the shape of a dream or nightmare.

The distinction between these two forms of worry—the superficial and the deep—seems to have been present in the mind of Keats when he wrote in his Ode to Sleep:

> "Then save me, or the passed day will shine
> Upon my pillow, breeding many woes;
> Save me from curious conscience, that still lords
> Its strength, for darkness burrowing like a mole."

In the latter type of case, in which insomnia is due to repressed anxiety, much can be done by means of judicious analysis and psychotherapy. Free ventilation and frank discussion of the underlying emotional conflicts is the essence of successful treatment.

The open worry, as a rule, is short-lived and resolves itself. Being of an occasional nature it may be justifiably treated with drugs. A whisky and soda at bedtime is often sufficient. It is most important, however, that sleeplessness of emotional origin should be taken in hand early, for the habit of insomnia is readily acquired, and we are then apt to encounter as a perpetuating cause of sleeplessness the anxiety about sleep. The patient goes to bed with the fear that he will not sleep, and this fear, gathering around it thoughts of the morrow's duties, successfully inhibits the sleep reflex and excites cortical activity. This fear must be treated from the start with absolute reassurance. As a cause of unpleasant symptoms the importance of insomnia must be minimized in the patient's sight. Finally, in a case in which this particular anxiety appears to be mainly responsible for the trouble, the patient may be given an effective draught—a drachm and a half of paraldehyde or 7½ grains of medinal, with the assurance that he will have a good night's sleep. If this follows, the same draught or cachet should be placed by his bedside on subsequent nights, with instructions that he should take it, *without hesitation*, if he is unable to sleep. If the case has been judged correctly this line of treatment succeeds. The presence of the drug by the bedside in itself allays the anxiety, and the patient sleeps soundly without taking it. After a few nights of this kind he ceases to bother about the drug, and as far as his insomnia is concerned may be considered cured.

In the treatment of the emotional insomnias bedtime ritual and muscular relaxation are both of value; the former may also be made a vehicle for reassurance; the latter is most useful in those individuals whose anxiety reflects itself in muscular tension. But the narcotic drugs are also essential in the majority of cases. That they should be at the same time more beneficial and more permissible in this than in other types of insomnia is intelligible in the light of our theory. Here we have the sleep reflex prevented by stimuli arising within the nervous system at a high level of cerebral integration. The cells in which these stimuli arise are therefore themselves susceptible to narcotic drugs in much the same degree as those cells which we have supposed to be concerned with consciousness.

Drugs may therefore be given regularly, at first in sufficient doses to ensure sleep, while at the same time the other therapeutic measures of psychotherapy, habit formation, and relaxation are employed with the object of re-establishing the natural rhythm. After the patient has had a succession of four or five good nights the dose is gradually reduced, the other measures, of course, being continued. In employing this method of treatment we are liable to encounter one of two difficulties—the patient is liable, on the one hand, to develop anxiety lest he become a drug habitué, or, on the other hand, when he finds that his dose in diminished, he may be kept awake by the renewed fear that to-night he will not sleep. This difficulty may be met by explaining to the patient from the first the rationale of the treatment and telling him that the dose will be reduced without his knowledge. This is easily done if the medinal is given in cachets. The size of the cachet and the amount of its contents are kept constant by replacing the medinal subtracted by sodium bicarbonate. The patient may thus be allowed to go on taking the cachets until he can be told he has now been sleeping soundly on nothing but sodium bicarbonate for several days. Or the cachet may be incorporated as a part of the bedtime ritual for some time longer before the disillusionment is completed.

Lumleian Lectures
ON
SOME FORMS OF VOMITING IN INFANCY.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, MARCH-APRIL, 1925,
BY
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LECTURE III.—SOME FORMS OF "HABITUAL VOMITING" IN INFANCY.

IN my first lecture I dealt with vomiting due to high obstruction from developmental defect; in my second with vomiting due to the imperfect working of the sphincters of the stomach and intestines. There remain a number of other conditions, marked by persistent and severe vomiting of more obscure etiology, but more frequent occurrence, which are best grouped together under the name "habitual vomiting of infancy."

VOMITING AND AEROPHAGY.

In the first place it will be well to consider the part played by aerophagy in the causation of habitual vomiting in early infancy. Every infant normally swallows considerable quantities of air mixed with the milk. Upon the breast this admixture is generally greater than when the infant is carefully fed from the bottle. The difficulties of breast-feeding are seldom due, as they commonly are in the unnatural feeding with artificial substitutes, to abnormalities in the chemical reactions within the stomach. The infant is the suction apparatus, upon the efficiency of which both the quantity and quality of the milk in great measure depends, and the difficulties of successful breast-feeding are largely concerned with the problem of securing effective adaptation of the suction apparatus to the nipple. With the bottle, on the other hand, the flow of milk is so easy that it calls for comparatively little effort on the part of the child. If a young infant is taken from the breast and given a bottle instead, it is a common experience to find that excessive aerophagy is at once diminished, together with its attendant troubles of pain, hunger, restlessness, and vomiting. A mother who has had this experience is likely to conclude that the quality of her milk had been at fault and to confuse what resulted from a want of adroitness in the infant's suction with a true dyspepsia. Her mistake will be tragical if, as often happens, a true fermentative dyspepsia is established by the unnatural diet and the infant exchanges for its former discomfort a dangerous and perhaps even fatal disorder.

Examination by means of the x rays of infants after breast-feeding shows clearly the extent of the normal aerophagy. At this early age in order to study the distension of the stomach with gas an opaque meal is unnecessary. While the meal is being taken the stomach of the nursling allows itself to be passively distended with the swallowed milk and with the swallowed air. By the end of the meal it is usual to find that the intake of air within the stomach has reached very considerable dimensions. For some time after the ingestion of the milk there may be no movement on the part of the stomach to contract down upon its contents—that is to say, the so-called peristolic function of the stomach is delayed. At length, after an interval—it may be perhaps after five or ten minutes—it is usual to note a somewhat brisk contraction of the stomach which expels a considerable part of the swallowed air with an eructation which is clearly audible. The practice common among nurses of holding the infant upright to assist in the expulsion of the wind is justified by what is apparent under the x rays. In that position the air ball lies most directly under the oesophageal opening, so that eructation without escape of fluid or with only a minimal escape of fluid is facilitated. If, on the other hand, the child is laid down upon its back the air ball may be prevented from escape by the intervention of fluid. Eructation then requires a very violent contraction of the stomach, and is apt to be accompanied by regurgitation of much of the stomach contents.

Aerophagy, a normal process and one which is always found in some degree to accompany the swallowing of milk, may be so excessive as to become pathological. Thus severe nasal obstruction, as might be expected, in a young infant interferes greatly with effective suction. The hold upon the nipple must be constantly broken, in order that a hurried breath may be caught. A nasal catarrh in a young infant is a serious misfortune, not only because it involves a considerable risk of direct extension to the bronchial tubes and to the middle ear, not only because it commonly gives rise to profound gastro-intestinal disturbance, but because the diminished power of suction which accompanies it endangers the whole process of lactation. The suction of the infant, hurried and intermittent because of the dyspnoea, fails completely to empty the breast; the yield declines; the flow becomes increasingly scanty, and the inco-ordinate efforts of the infant result only in the distension of the stomach with swallowed air (Fig. 1).

But a still more frequent cause of excessive aerophagy is to be found in what may be called the vicious circle of nervous unrest. The reflex act of suction in the young infant only proceeds powerfully and effectively when the child is quiet and at rest. When, on the other hand, the child is too eager and too excited, as it is apt to be after much hungry crying and persistent sleeplessness, a voluntary effort at suction seems to be attempted and takes the place of the more instinctive reflex act. Like all other voluntary movements at this early age, such suction, though violent and eager, is inco-ordinate and ill controlled. The infant greedily grasps at the nipple, sucking, swallowing, choking, and even crying, all at the same moment. Such a procedure rapidly leads to a distension of the stomach with air. Suddenly the violent efforts at suction cease, and the restlessness and crying break out afresh. Ineffective suction of this sort causes a rapid deterioration in the quantity and quality of the milk. Hunger grows apace. The persistent sleeplessness and restlessness of the child, because of the immensely increased expenditure of energy, raise the needs for food far above the normal at a time when the natural powers of suction are inhibited by the emotional disturbance, and when the mother's milk is diminishing in amount.

Such is the vicious circle which accounts for by far the greater part of the failures in the early weeks of lactation to establish and continue breast-feeding. It involves, it is true, a failure on the part of the distracted mother, but a failure, I think, not primarily of her mammary secretion, but of her power to quieten and control the restless nervous system of her infant. It has always seemed to me that the emotional instability of the human infant, to which in the animal kingdom we find nothing at all comparable, accounts for the comparative frequency of its failure to win sustenance from its mother's breast.

The most striking instances of distension of the stomach with air which I have encountered have all been in infants suffering in this way from sleeplessness, hunger, nervous unrest, and inco-ordinate suction (Fig. 2). In states of primary inanition, where the initial fault is a failure of the mammary secretion and not a failure of nervous control in the infant, I do not think aerophagy is common.

If suction is powerful and effective, as it is in a strong and placid infant, aerophagy is at a minimum while the yield of milk is at a maximum. In these circumstances, when, some time after the conclusion of the meal, the stomach contracts in the so-called peristole, there is apt to be a gentle regurgitation into the mouth of a little milk, mixed with the swallowed saliva and gastric juice. This is the so-called posseting. In every country, as might be expected, we find a proverb to the effect that posseting is the mark of the thriving, well nourished, and contented child. On the other hand, with a greater admixture of the stomach contents with air, the repeated eructation of air may be necessary before comfort is assured. In some cases the eructation is accompanied by the forcible regurgitation

of a considerable part of the stomach contents. The peristolic contraction of the stomach is exaggerated and violent and the resultant vomiting forcible and explosive. The sound of the escaping air is usually audible. Habitual vomiting due to aerophagy is apt to be mistaken for that due to pyloric spasm or even for that due to hypertrophic pyloric stenosis. Visible peristalsis, pyloric tumour, and the characteristic inanition stools are, however, here wanting.

Different authorities have estimated very differently the importance and frequency of aerophagy as a cause of habitual vomiting. Marfan, who has recently dealt very fully with the whole question, regards the aerophagy, not as a primary, essential, and constant factor, but as something secondary, contingent, and variable. According to his view the essential cause is to be found in a hyperaesthesia of the gastric mucous membrane, a hyperaesthesia which may favour the purposive swallowing of air and the secretion of excess of saliva, while the distension of the stomach with the swallowed air may favour the vomiting. On the other hand, Lesage, Guinon, and others in France, Rosenstern and Usener in Germany, have argued convincingly for the importance of air-swallowing as in itself a cause of habitual vomiting. Certainly the results of treatment directed to control and prevent aerophagy, but in no way calculated to allay gastric hyperaesthesia, are sufficiently constant to suggest that the air-swallowing is of primary importance in causing this variety of habitual vomiting.

FIG. 1.—Showing extreme distension of the stomach with swallowed air after a breast feed, in an infant with nasal obstruction and mouth breathing.

The Treatment of Habitual Vomiting due to Aerophagy.

1. Thus it is by no means unusual to find that the infant, invariably sick after a breast-feed, will retain the feed without difficulty if it is given carefully from a bottle, even when the contents of the bottle are composed of the same breast milk which is vomited when sucked directly from the breast.

2. If the infant in whom the aerophagy is due to inco-ordinate suction as a result of nervous unrest is fed, not when hungry and excited from long crying, but when drowsy and quiet, there may then be no aerophagy and no subsequent vomiting. In the out-patient department at Guy's Hospital I have very often demonstrated this point. In an infant 1 or 2 grains of chloral hydrate given a few minutes before the meal is usually sufficient to secure a quiet and drowsy state. If then the mother's nipple is gently inserted into the mouth of the slumbering child, without awakening it and without provoking the restless emotional state, the breast may be drained steadily and well, there may be no subsequent vomiting, and the infant may continue to sleep soundly after the meal.

FIG. 2.—Showing extreme distension of the stomach with swallowed air, in a breast-fed infant with inco-ordinate excited suction and nervous unrest.

3. Recently Rogatz and others have studied under the *x* rays the effect of giving a small amount of a thickened food before the usual feed of breast milk. The characteristic *x*-ray appearance of the stomach of the infant is determined, not by anatomical peculiarity, but only by the circumstance that the diet is always and invariably fluid. Under ordinary conditions the stomach of the infant shows no tendency to contract down upon the entering milk, while the fundus remains distended with a huge ball of air. The contraction of the stomach, the peristolic contraction, can be stimulated by giving comparatively small amounts of a semi-solid substance—one or two tablespoonfuls, for example, of a very thick gruel. A paste of farina, in the proportion of 10 grams of farina with 100 c.cm. of skim-milk and 100 c.cm. of water, boiled for an hour until sufficiently thick to adhere to an inverted spoon, may be given in doses of 30 c.cm. before the breast-feed. A semi-solid mixture of this sort is capable of producing a brisk contraction of the stomach, so that its distension by air during the subsequent suction at the breast is prevented. On several occasions I have found this device completely successful in allaying habitual vomiting of long duration and great severity. In one case the infant was sent to me at the age of 9 weeks with the suggestion that it was suffering from congenital hypertrophic stenosis. The mother reported to me some weeks later that on no occasion had the baby ever been sick when the gruel had first been given, although vomiting still almost always followed breast-nursing if this preliminary was omitted.

The success of treatment upon one or other of these lines is in keeping with the assumption that aerophagy by itself may be the essential cause of some cases of habitual and violent vomiting.

VOMITING AND NERVOUSNESS.

It requires small experience of infantile disorders to convince oneself that the infant who suffers from hyperemesis is almost always tense, nervous, emotional, and more than usually unstable. Such infants, indeed, seem to suffer from a generalized hyperaesthesia. A loud sound, a bright light, or a sudden movement in their neighbourhood produces a maximum response. From the first, too, the heightened sensibility of the nervous system is apt to show itself in an extreme sensitiveness in the matter of taste. The slightest alteration in flavour—the prescription, for example, of dextrimaltose instead of the lactose to which it has become accustomed—may cause resistance or refusal or vomiting. Sleep is almost always scanty and superficial. In response to the slightest stimulus, instantly the child is wide awake, the anxious strained expression flows back into the face, and the inevitable crying begins again. In these neuropathic infants the muscles generally show a certain degree of hypertonus. The abdominal wall tends to be rigidly contracted, with the outline of the recti abdominales clearly visible. Opisthotonos is common, while the hands are nearly always held tightly clenched. Such infants may appear to suffer from a veritable gastric hyperaesthesia. The presence of food in the stomach may evoke every appearance of extreme pain and discomfort and may be followed regularly by vomiting, whether the infant was fed upon the breast or the bottle. Habitual vomiting of this sort may occur in such children even when there can be no question but that the food is suitable in amount and in composition. Sometimes in later years other troubles arise which give the clue to the constitutional weakness which first manifested itself in this infantile gastric disorder. In inquiring into the past history of children with such functional nervous disturbances as enuresis, asthma, stammering, habit spasm, and so forth, a considerable proportion will be found to have suffered in this way in early infancy. Again, the appearance of eczema in later infancy has been noted by Finkelstein and others.

The Treatment of Vomiting due to Nervous Unrest.

The treatment of this nervous vomiting may be a matter of great difficulty. One thing makes itself very clear—that it is always an unwise and unsuccessful manœuvre to attempt to allay the vomiting by prescribing a hunger

period or by diluting the food or curtailing the total amount given. Such devices, essential in treating the ordinary form of infantile dyspepsia, only serve to make this habitual vomiting of the nervously unstable child very much worse. Indeed, it is remarkable that in many cases the weight curve will continue to ascend and the nutrition will remain unimpaired in spite of violent and persistent vomiting. In practice it is common to find that serious malnutrition is caused not so much by the vomiting as by unwise efforts to control it by the prescription of an inadequate diet or a diet modified to such an extent as to be deficient in certain essentials. It is, however, usual to find that the stomach is especially intolerant of a diet with a high proportion of fat. It is apparently the volatile fatty acids which especially possess for these infants an emetic action. One such infant under my care was almost invariably sick after the breast, and after the fifth month of life, when weaning took place, after a meal of cow's milk, even in considerable dilution. Upon a diet of milk from which fat was removed until the percentage was never higher than 1.5, and which was then soured with a lactic acid bacillus, vomiting was only occasional, and a satisfactory growth of weight was achieved. In all, three attempts were made to return to a diet with a higher fat percentage, but always with renewal of the vomiting. With these restless, hypersensitive infants it is above all necessary to avoid the stimulus of excessive hunger, and to see to it that the needs for food are amply covered. In this we are reminded of what is found to be the rule by Hurst, Fairbairn, and others in the treatment of hyperemesis gravidarum and certain other forms of nervous vomiting in adults. Treatment, if it is to be successful, must aim, not so much at controlling the vomiting as at allaying the nervous unrest. Such vomiting often ceases as if by magic when the infant is admitted to a hospital or when the confident handling of an experienced nurse succeeds to the too timid and anxious control of an inexperienced mother. Rest, quiet, and the absence of all stimulation are essential. Prolonged immersion in a hot bath, or a hot pack, may secure sleep and start the habit. Enveloping in a tight and restraining shawl—the primitive wisdom of all peoples has taught them the value of swaddling clothes, the infantile strait-waistcoat, in securing rest—is often helpful. The habitual vomiting of nervous unrest ceases only when deep sleep is secured and the restlessness sensibly diminishes.

Other forms of persistent vomiting due to nervous causes are occasionally encountered. Thus, in older infants, we sometimes meet with vomiting which might be described as due to a conditioned reflex. Thus one particular meal, although its composition differs in no way from that of the others, given at one particular time of the day, alone may be consistently rejected. Or it may be that a meal given by a particular person, or in a particular room, alone is vomited. Again, by the end of the first year it is quite common to meet with a purposive rejection of food as part of the anorexia nervosa of nervous children. With unwise management the dominating, restless child is apt to show to perfection the symptom which has been called "negativism." Whenever the maternal traction in one direction is exercised too obviously and insistently the child seems forced into a posture of resistance. As might be expected, the struggle waged between the child and its elders is apt to involve the question of the intake of food. The more the child is urged and entreated to take the food, the more resolute is the opposition. Many mothers have told me that in such circumstances the only way in which they have succeeded is by feeding the baby when it is asleep. They have crept to the side of the cot and aroused the child just sufficiently to admit the teat of the bottle into its mouth and to provoke the act of suction. But if they have accidentally wakened the child too thoroughly so that complete consciousness of its surroundings has returned, the first waking thought has been of the habitual refusal, and the bottle has been pushed away with every sign of determined rejection and resistance. It is characteristic of this negativistic attitude to food that when the unwise urgings of the anxious mother cease food may be taken with avidity. Thus older children, having refused all food at the table, will descend upon the floor and greedily scavenge for crumbs. Two mothers told me recently that the best meal their children made in the day was when, with a parcel of unappetizing crusts for the ducks in the park, they took their walks abroad. Most of the crusts were then consumed by the children, and one of the mothers had even got into the way of including certain nutritious pieces of brown bread-and-butter in the parcel in the sure hope of its consumption by the child. If, in dealing with such a trying case, force is attempted and a strong-minded woman with uplifted spoon attempts to feed the child against its will, vomiting almost certainly results, and I have met with more than one case in which vomiting, clearly originating in this way, has persisted as an inveterate neurosis for many years. In some cases the sight or sound of the preparation of food has sufficed always to produce vomiting. It is clear that the more attention that is paid to vomiting of this sort, the more it is discussed and deplored in the child's presence, the more inveterate does it become. Such disturbances are not, however, difficult to control if their nature is clearly understood and the faults of management to which they owe their origin are corrected.

Habitual Vomiting and Idiosyncrasy against Cow's Milk.

Something must be said of the views, expressed in an extensive modern literature, that the explanation of a large part of the difficulties which are encountered in attempting to feed the infant upon a diet of cow's milk is to be found in a frequent intolerance for the protein of the foreign milk whereby certain anaphylactic reactions are determined. Certainly from time to time we do meet with infants who exhibit the most extreme intolerance for even minimal amounts of cow's milk. Kleinschmidt, Finkelstein, Park, and many others have studied and recorded cases of this nature. The characteristic symptoms are sudden extreme pallor, drowsiness, a rapid almost impalpable pulse, pyrexia, vomiting, and diarrhoea, often with the passage of blood-stained stools. Less usually scarlatiniform or morbilliform rashes are added to the picture, or transient oedema. Glycosuria may occur. This violent and characteristic shock may be provoked by minimal amounts of cow's milk. Thus in Park's case a considerable reaction was produced by the ingestion of four drops of milk. An appreciable reaction has even been produced by a single drop. The symptoms may begin immediately after the intake of the milk, or rather unaccountably they may be delayed for several hours. They may occur the first time cow's milk is given to the infant instead of the breast, on which it has so far thrived, or the trouble may develop at any time subsequently throughout infancy. Recovery is rapid when milk is withdrawn. Goat's milk may be perfectly well tolerated when cow's milk produces dangerous symptoms. Schloss, who has devoted great attention to these cases, finds that many infants, who show profound disturbance when given raw cow's milk, can tolerate boiled or dried cow's milk without difficulty. In the majority of these cases, although not in all, a positive cutaneous test has been found. Schloss is of opinion that the lactalbumin rather than the casein is the protein usually responsible. Many infants recover spontaneously, but success is claimed both for desensitization by the subcutaneous injection of graduated amounts of sterilized milk, and for desensitization by ingestion of graduated amounts by the mouth. Such severe cases of intolerance for cow's milk, although they undoubtedly occur, are admittedly of extreme rarity. They fall into line with cases which show a similar intolerance for the protein of eggs and for certain vegetable proteins.

Recently, however, Weill and others in France have gone much further and have found the explanation of many cases of habitual vomiting in infancy, as well as of many cases of urticaria, eczema, atrophy, and malnutrition, in a similar but mild form of anaphylaxis against cow's milk, and even against the milk of the mother. According to Weill, subcutaneous injections of milk may give rise to the most remarkable and unmistakable improvement. The first symptoms to improve are those of the nervous system.

Within twenty-four or forty-eight hours the agitation and insomnia are greatly lessened. The vomiting is more slow to disappear, but improvement is likely to appear within a week or ten days. For a cure some three or four injections are usually necessary.

Professor Marfan has not been able to substantiate such precise claims. My own experience of treatment in this way is altogether too slight to enable me to speak either in its favour or otherwise. I feel that the whole subject is in need of careful investigation, in view of the work and claims coming from many quarters.

Habitual Vomiting and Rumination.

The phenomenon of rumination in the adult and in the older child has been dealt with with great fullness in an interesting paper by Brockbank in 1907. In most of the recorded cases the peculiarity is familial, acquired involuntarily in later childhood, and persistent throughout life or at least for a great part of life. The act of regurgitation is partially under the control of the will. With an effort it can be prevented, and the ruminator whose aesthetic sense is offended by his infirmity may for long escape detection. Brockbank does not discuss the relationship between his cases of rumination in adults and the much more common rumination of infancy. Probably they are not closely connected. In no case of rumination in infancy have I found a family history of rumination, and the after-histories of infants who show this symptom do not disclose, unless it be in exceptional and so far as I know in unrecorded cases, persistence of the habit into later life. In general it is characteristic of infantile rumination that it ceases when solid food replaces the fluid diet. Adult rumination, on the other hand, appears to begin after the milk period, and to occur only with solid food. But the most striking difference would appear to lie in the attitude of mind of the sufferer. The adult ruminator suffers no discomfort; Brockbank even records cases in which the act was pleasurable. But, in general, in adults the regurgitation is not the culmination of a series of movements, voluntarily undertaken and steadily pursued until success is achieved. The adult does not seem impelled to evoke the act in order to achieve a sense of present satisfaction, nor does he evince signs of nervous irritation if thwarted in his purpose. In the infant, on the other hand, it is very evident that achievement of his purpose produces a sense of beatitude, while failure results in nervous unrest and irritation.

Pathogenesis.

In early infancy, when sensation is awakening, certain stereotyped movements, calculated to evoke certain sensations, are apt to become fixed by repetition until they grow habitual. Since the mouth and tongue are most richly endowed with sensory nerve endings, as might be expected, the most common action of this sort is thumb-sucking or lip- or tongue-sucking. Head-banging, thigh-rubbing—that is, infantile masturbation—and rumination have precisely the same significance. No doubt in these latter instances there may have been originally some transitory local irritation which led to the first movements being practised—in thigh-rubbing vulvar irritation, in head-banging irritation from slight otitis media, in rumination some trivial gastric discomfort. But long after the local irritation has subsided the act may persist with ever-increasing frequency. In sucking thumb or lips it is not necessary to suppose the existence of any preliminary irritation which has attracted the child's attention to the part. The act of suction alone is instinctive, and needs nothing to provoke it except the presence of something to suck.

These lowly forms of gratification from sensory stimulation are normally found only in infancy. As the mind awakens and the level of intellectual enjoyment arises, as the child's thoughts become filled with recollections of yesterday's happenings and anticipation of to-morrow's, these habits and these joys are forgotten. They are perpetuated only when unwise forbiddings and expostulations or the injudicious use of mechanical restraint, the object of which is appreciated by the child, have served to waken ungratified longing, to focus attention on the fault, and to impress it deeply upon the memory. Finally, if the grown-up people around the child show distress or anxiety, the child very readily catches the general restlessness and apprehension. No one of these stereotyped acts shows better these general characteristics than does rumination.

Ylppö and others have maintained that aerophagy plays an important part in the production of rumination, but the consensus of opinion is against this view. Gastric disorders of all varieties may serve as predisposing causes, but no connexion between rumination and any particular gastric disorder can be clearly established. Gött appears to me right in arguing that all the features of rumination show its relationship to the stereotypias, not to the dyspepsias. *Post-mortem* observations have disclosed only a stomach in extreme systole.

Symptomatology.

The onset is perhaps never before the fourth month of life. It is seldom well developed or typical before the sixth month. I have had the opportunity of studying carefully five well marked cases, besides a number of slighter and less developed examples, in infants who, for all their efforts, never perfected themselves in the practice. All my cases have been in artificially fed infants. After taking the meal quite in the ordinary way the baby, as a rule, lies quiet for a time. Then begin certain purposive movements, by which the abdominal muscles are thrown into a series of violent contractions—the head is held back, the mouth is opened, while the tongue projects a little and is curved from side to side so as to form a spoon-shaped concavity on its dorsal surface. After a varying time of persistent effort, sometimes punctuated by grunting or whimpering sounds, expressive of irritation at the failure to achieve the expected result, with each contraction of the abdominal muscles milk appears momentarily in the pharynx at the back of the mouth, as the column of fluid is pressed upwards through the stretched oesophagus. In this way the head of the column of milk may be momentarily visible many times as it attains its highest point, only to fall back again out of sight when the pressure is relaxed. Finally a successful contraction ejects a great quantity of milk forwards into the mouth. The infant lies with an expression of supreme satisfaction upon its face, sensing the regurgitated milk and subjecting it to innumerable sucking and chewing movements. Some of the milk may escape from the mouth and in that sense be vomited. In a well marked instance much the greater part is caught and retained.

The power to ruminate successfully is not suddenly acquired. In the earliest stages, before dexterity has been achieved, the act differs relatively little from that of vomiting. Similarly the number of masticatory movements as a rule progressively increases. At first there may be ten or twelve, later several hundred such movements may follow the regurgitation. In its earier development, therefore, rumination is very apt to be mistaken for habitual vomiting due to other causes, and it may require careful observation to make the distinction evident. Nor are such babies easy to observe. It is characteristic of the ruminating child that it sins its sin only in secret. To watch it openly is to put a stop to the whole procedure. Hence the great difficulty of securing a satisfactory radiographic examination. On every occasion on which I have tried to secure a radiograph the infant has shown no disposition whatever to indulge. I had hopes of being able to enliven this lecture by a cinematograph display of a well marked case, but my failure was again complete for the same reason. Only when the child is alone and in a drowsy, vacant state, while nothing distracts attention or excites curiosity, does the act take place. Ruminating infants are almost always alert, excitable little creatures, their faces lit with an unusual variety of expressions. As a rule, rumination can only be observed by stealth, by peering through peep holes, between screens, and so forth.

The nutrition commonly suffers to some extent, and the infants tend to be considerably under weight. This is especially marked in the early stages, when regurgitation is accompanied by the escape of a great part of the food. Under the impression that the disorder is a true vomiting

indicative of some form of dyspepsia, many of the cases have undergone severe restriction in their diet, or the food may have been modified, with unfortunate results. The condition may persist for many months. In the most severe, death from hunger or from intercurrent infection may occur.

Treatment.

For a time to distract the infant's attention seldom fails, but always to carry the infant around after meals or to arouse its interest by means of rattles or musical boxes is apt ultimately to exhaust both nurse and child. Strauch achieved success by the simple method of plugging the nostrils, since the resulting mouth-breathing renders it difficult to express the column of fluid into the pharynx. This succeeded perfectly in one of my cases, in the others it failed. It is further recommended that the infant should always be placed upon the abdomen after a meal. Others have endeavoured to prevent rumination by forcible closure of the mouth. A cap and a chin-piece are connected by two side-pieces of webbing, each bearing a buckle, and after the feed the mouth is held securely shut by tightening the side-pieces. This again has proved a successful device in some, but not in all the cases in which I have tried it. Probably the most uniform success has been achieved by thickening the child's food to the consistency of a thick gruel. I have used successfully farina boiled with milk until it was thick enough to adhere to an inverted spoon. In infants after the seventh or eighth month it is often sufficient to anticipate by a month or two the change to a mixed diet and to feed them as the normal child would be fed at the beginning of the second year. Rumination of this sort is prevented, or at any rate made much more difficult, when solid replaces fluid diet.

Finally, it is well to emphasize that in rumination, as indeed in almost all the conditions of habitual vomiting considered in this lecture, the personal factor of the nurse is of supreme importance. Rumination, like aerophagy, like the vomiting due to idiosyncrasy for cow's milk, and like the vomiting of nervous unrest, is found most commonly among infants of psychopathic inheritance and in a psychopathic environment. Isolation, handling by a competent self-confident nurse, the reduction of emotional disturbance to a minimum, are all of the greatest importance if recovery is to follow. The nervous disturbances of infants, like the infective disorders of infants, are apt to display themselves for the most part by symptoms referred to the sensitive gastro-intestinal tract. The infant has indeed but one function highly organized and therefore capable of showing complex disturbance—the function of digestion. It is in disorder of that function that throughout infancy nervous instability, inherited or acquired, especially shows itself.

I have to thank Dr. G. W. Nicholson, Professor Adrian Stokes, Mr. Redding, Dr. Lindsay Locke, and Dr. Vertue for their great kindness in providing me with the microscopic sections, microphotographs, and radiographs with which these lectures were illustrated, some of which have been here reproduced.

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TREATMENT OF INOPERABLE CARCINOMA OF THE CERVIX UTERI WITH RADIUM:

*DESCRIPTION OF THE MORE RECENT METHODS EMPLOYED.**

BY

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THE purpose of this paper is to demonstrate that the results of radium treatment in inoperable carcinoma of the cervix uteri are so promising that it is imperative that as many of us as possible should join in combined and organized research on these lines.

Medical opinion in this country is extremely sceptical of the value of radiotherapy, and I cannot help thinking that this is because so little systematic work has been done on the subject. I would ask the profession to keep an open mind, as much harm is done by the expression of very optimistic or very pessimistic views on a method which is, comparatively speaking, so new. Many people think of radium as a drug, of which there is only *one* dose and *one* method of administration, and that if this does not prolong the patient's life the treatment is of no value. Many years will elapse before we reach any final judgement on the value of radiotherapy, and meanwhile, in order to make progress, we must compare the value of the different techniques, not only as judged by complete cure of the patient, but also by lesser standards. These standards are: (1) histological; (2) rate of disappearance of symptoms, such as haemorrhage; (3) rate of disappearance of the local growth and healing of the malignant ulcers; (4) duration of the patient's life after treatment.

Next I would appeal to those working at this subject to make their reports on uniform lines, and, when mentioning the dose, to give the fullest details as to whether radium element is used or radium emanation, and, if the former, whether the number of milligrams relates to the salt or the element; the exact material and thickness of the filters; the form of the applicators; the exact number of hours during which the radium is applied; and as far as possible the distribution of the radium in relation to the growth. If emanation gas is used, additional notes should be quoted—namely, the number of millicuries at the commencement of the treatment and the number of hours. It is of little or no value to talk about milligram hours or even millicuries of emanation destroyed.

[The work here described has been carried out with radium kindly lent by the Medical Research Council.]

DESCRIPTION OF TECHNIQUES.

Speaking generally, there are two schools of technique—one which believes in external application only, the other which believes in burying the radium close to or within the growth. The arguments for the different opinions may be summarized as follows.

Those who advocate external application consider—

1. That any incision, even the introduction of needles, may disseminate the growth.
2. That the injured normal tissues may be affected by the radium to an undue extent, as it is well known that radium affects cells which are about to go into mitosis.
3. That the tissue extracts produced by injury to the normal cells may stimulate the growth of the tumour.
4. That the burying of needles may produce sepsis under conditions very suitable for the growth of organisms.

Those authorities who advocate the burying of needles do not consider that these objections are in any way comparable to the advantages of the greater intensity obtained by placing the needles near the growth, and, further, that if the radium is used from outside, the doses have to be so large that there is a considerable likelihood of damaging the skin and other intervening tissues. The Radium Institute of Paris is, on the whole, inclined to believe in external application. The Radium Institute of Brussels believes in buried radium. Most of the American institutes

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believe in buried radium, and some of them use unscreened glass tubes by means of which the beta rays are brought into action. The Radium Institute, Stockholm, believes in external application. Opinion in this country is divided.

Vaginal Treatment by Surface Application.—The usual routine is as follows: The vagina is prepared by means of douches, but the growth is not cauterized or in any way interfered with. One or more tubes are placed in the cervical canal, containing in all approximately 50 mg. of radium element, with a filter of 0.5 mm. of platinum. In the vagina there are more tubes, heavily filtered with 0.5 or 1 mm. of platinum, and sometimes these have additional filters of cork or aluminium and rubber, to stop the secondary rays coming from the platinum filters and to act as distancers. The amount of radium contained in these vaginal tubes is 25 to 30 mg. of radium element, making 75 to 80 mg. in all. The exact details of the filters vary in different clinics. The duration of application also is a matter of opinion, some authorities advocating twenty-four hours, others as much as a week or even more. On the whole the tendency seems to be to lengthen the duration of exposure.

Extra-abdominal Application of Radium.—In addition to vaginal application large quantities of radium are sometimes used on the surface of the abdomen, placed at a distance from the skin. This method has been widely employed in America, where as much as a gram of radium is used at a distance of 10 cm. As an example of burying technique by the vagina, I will describe my own method of treatment.

Method.—The patient is douched for two or three days before the operation with weak lysol. At the time of operation she is placed under an anaesthetic in the lithotomy position, and the vulva and vagina cleaned with picric acid 3 per cent. in spirit. A microscopic section of the growth is then taken in every case in which the radium is applied for the first time. The needles are placed in and around the growth, keeping as far as possible about half a centimetre of tissue between each needle. The longer needles are pushed outwards as well as upwards into the base of the broad ligaments. The whole vagina is then packed with gauze soaked in flavine. The amount of radium I generally use is as follows: 8 large needles approximately 6 cm. long, each containing 3 mg. of radium element, filter 0.5 mm. of platinum; 12 or 13 smaller needles, each containing 2 mg. of radium element, filter 0.5 mm. of platinum; total number of mg. 48 or 50. These remain in place for 144 hours.

Skiagram of needles placed in position per vaginam. The shorter needles grouped in the centre are encircling the cervix. The longer needles on either side are in the base of the broad ligaments.

In my present series of cases the patient has a second vaginal application after an interval of four weeks.

Technique for Intra-abdominal Radium.—The great difficulty is to affect the deeper parts of the growth. With this in mind I carried out in one series the technique suggested by Daels of Ghent. This consists in putting the radium alongside the iliac glands, but extraperitoneal, and is carried out in the following manner:

The patient is put under an anaesthetic in the lithotomy position. An incision is made in the ischio-rectal fossa and blunt dissection carried out with the finger as far as the spine of the ischium. Another incision is made just to the inner side of the anterior superior iliac spine, and a blunt dissection carried out, the finger passing over the psoas muscle and external iliac vessels. A tube is then passed from the lower incision right through the pelvis to the upper incision, and through this tube a chain is guided, the tube being then removed and leaving the chain in place. One radium tube is attached to this chain, which is pulled on, and the desired depth can be obtained by counting the number of links of the chain remaining outside. The radium is moved each day, and entirely removed at the end of the third day.

This operation I carried out in 14 cases. Although some of these cases have done well I do not care for the technique, as it involves too much blunt dissection, and the radium is concentrated into one mass, and therefore does not conform with my ideal of uniform distribution throughout the growth.

The next method that I tried was that employed at the Radium Institute of Brussels—namely, the intraperitoneal method.

The patient is put in the Trendelenburg position and the abdomen opened. Needles are then placed in the back of the uterus and in the broad ligaments, and the rubber-covered wires holding them are brought out through the lower part of the abdominal wound. The whole pelvis is then packed with gauze (it generally requires about 8 yards of 6-inch gauze), and the end of the gauze brought out with the above-mentioned wires through the lower part of the abdominal wound. At the end of a week the gauze and wires are pulled out, the patient being given gas anaesthesia. I have performed this operation in ten cases.

Although some have done quite well I am not satisfied with the technique, and am at the present moment working out a new method, using a rubber plug to fill the pelvis.

Combined Radium and X Rays.—Until recently facilities at St. Bartholomew's Hospital for this method of treatment have been rather restricted, and my own experience of combining radium and x rays has been limited to a few patients treated in private by Dr. Finzi, two of whom have been very satisfactory indeed. Now that we have installed a deep x-ray plant purely for research we hope to undertake a large series of such cases.

Conclusion regarding Technique.—My own opinion is that any technique should aim at getting a comparatively small intensity evenly distributed throughout the growth, and applied for a comparatively long time.

Dosage.

The question of the best dosage is still *sub judice*. It is from the solution of this difficult problem that the final technique will be evolved.

Although it is impossible here to discuss in detail the physics of radium, yet there are one or two points to be remembered. The first of these is the fact that the intensity of radium obeys the inverse square law in the same way that light does. As an illustration it may be noted that the dose received by the fingers holding a tube of radium with a filter of 0.5 mm. of platinum for half a minute is the same as if those fingers were exposed at a distance of one yard from the radium for a period of three and a half years; or, to put it in a more practical form, the tissues of the pelvis 2 inches away from the tube receive 10,000 times less irradiation than the tissues immediately surrounding it. In these circumstances, is it a matter for surprise that those people who only put one tube into the middle of the cervical canal do not prolong the lives of their inoperable cases? Another point to remember is the filter, which makes a considerable difference to the type of rays and intensity.

Units of Dose.—In order to understand the description of various techniques we must be quite clear about the expressions used to indicate units of dose. In using radium element in the form of a salt we should speak of x number of milligrams of radium element used for y number of hours, and then add the full description of the distribution and number of needles or tubes. When, however, emanation gas is employed the unit used is spoken of as a millicurie.[1] When emanation gas without its parent salt is used it breaks down rapidly, so that its activity declines by one-sixth every twenty-four hours. There are two ways of describing the dosage when emanation is used. We can say that the dose was x number of millicuries applied for y number of hours, and then work out by reference to a table the mean number of millicuries for the length of time of application. Or we can describe the number of

[1] When a milligram of radium is sealed up for a time the amount of emanation gas becomes constant, and this equilibrium amount is spoken of as one millicurie, and can be measured by its effect upon an electroscope.

millicuries of emanation gas which have been destroyed during that time. For instance, if we put in 100 mc. and take them out after twenty-four hours, we shall have used approximately 16 mc. This latter method has the advantage that it can also be used for calculating the dose when radium element is employed. Whichever method is used it is still necessary to give details of the number of tubes, distribution, filters, etc.

Dosage in Relation to Biological Effect.—A great deal of work is being done in various laboratories to find out the exact action of radium on the normal tissues, and until the laws governing such action are known we clinicians can only grope about in the dark, trying by empirical means to find the most efficient dose. The first, and perhaps the most important, point to be decided is whether the biological results are proportional to the irradiation received; in other words, are the same biological results obtained by using 100 mg. of radium element for twelve hours as 50 mg. for twenty-four hours? That is, is it better to use a small dose for a long time or a large dose for a short time, or is it exactly the same thing? There is a certain amount of laboratory evidence that it is not the same thing, and in my opinion the clinical evidence is very much in favour of a medium dose, well distributed, applied for a very long time; in my last series of cases I have been using 50 mg. of radium element in twenty needles for 144 hours at a time, with distinct improvement in immediate results compared with my former series.

RESULTS.

The general public, and for that matter the majority of practitioners, will only judge results by the number of years the patient lives after the treatment, and although we all hope that eventually radiotherapy will be able to stand such a test in the case of inoperable carcinoma of the cervix, yet it is obvious that at first we must judge by the local and histological effects, for, as already mentioned, the more inaccessible parts of the growth go on living and continue to kill the patient as heretofore. That does not mean that radium has no effect on malignant disease; it merely means that we have not yet learnt how to apply it to the whole growth. My disinclination to judge the results of radium treatment by the years that a patient lives does not arise from a wish to vindicate radiotherapy. We at St. Bartholomew's took the matter up four years ago with absolutely open minds, and we judged the improvement or otherwise following the use of different techniques by:

1. The histological evidence from the uteri removed by hysterectomy following radium.
2. The rate of disappearance of symptoms.
3. The rate of disappearance of the growth and the healing of the malignant ulcers.
4. The duration of the patient's life after treatment.

Histological Evidence.

This histological work was all carried out by my colleague Dr. R. G. Canti. During the first two years of our research we paid particular attention to the histological findings after irradiation, and in two series comprising over 50 cases the amount of radium used and the technique were approximately the same, and we only changed the number of hours, the first series being for eight hours, the second for twenty-four. The conclusions that Dr. Canti came to were as follows:

(*a*) That the introduction of approximately 170 mg. of radium element into and around the cervical tissue for twenty-four hours is capable of causing a complete disappearance of the growth in the cervix within a few weeks, whereas the same application for eight hours produces little or no effect in the quantity or appearance of the growth.

(*b*) That definite series of changes in the carcinoma cells can be demonstrated after irradiation, leading up to complete destruction of the cell.

(*c*) That little or no effect has been produced in affected iliac glands when the cervix is irradiated.

(*d*) That as changes in the malignant cells take place before the formation of fibrous tissue, the latter is not the causal agent in the disappearance of the growth.

(*e*) That the carcinoma cells are more vulnerable than the uterine musculature, but in the latter local atrophy and fibrosis take place at a later date.

In one case, in which hysterectomy was performed as early as four weeks after the first application of radium, no growth was found in spite of a number of sections being cut and examined, and in the other hysterectomies (some of them performed at the end of a week, others after several weeks), if growth was found at all it was so affected as to make it impossible to believe that the cells would have been viable.

Disappearance of Symptoms and Signs.

In order to get the most reliable symptoms and signs by which to judge the effect of irradiation, we have chosen the three following: (*a*) haemorrhage; (*b*) ulceration; by this we mean malignant growth of an ulcerative type, in contradistinction to (*c*) the proliferating cauliflower type of growth.

An analysis of these symptoms and signs shows the following: Of 85 cases treated, all were quite inoperable except 11. Of these 11, 5 were borderline cases upon whom some people would undoubtedly have attempted operation, 6 were cases upon whom I myself would have operated had it not been for the general condition, or the fact that the patients themselves refused operation.

(*a*) *Haemorrhage.*—Of the 85 cases, in 5 no note was made of the symptom of haemorrhage after treatment. Of the remaining 80, in 68—that is, in 85 per cent.—haemorrhage ceased, either permanently or for a considerable time, which in itself is of benefit to the patient.

(*b*) *Ulceration.*—Of 68 cases in which ulceration was noted before treatment started, and in which a note was made concerning this condition after treatment, it was found that ulceration had disappeared entirely, either temporarily or permanently, in 43 cases—that is, in 63 per cent. In 25 cases ulceration did not disappear. In these 25 cases, as a matter of fact, it diminished for a time in some, but as the question of the size of an ulcer is always a matter of opinion this is not taken as any index.

(*c*) *Growth.*—In 37 cases in which growth (by this is meant the raised cauliflower type of growth, in contradistinction to malignant ulceration) was noted before treatment, this entirely cleared up in 26—that is, in 70 per cent. In 11 cases it did not disappear entirely, although in some it was diminished.

It was noted that both these last signs—malignant ulceration and malignant overgrowth—disappeared more quickly in those cases which had had applications of radium for long duration.

Duration of Life.

The figures relating to the cases treated at St. Bartholomew's Hospital are as follows:

Of 85 cases treated between May, 1921, and April, 1925, 74 were hopelessly inoperable, 5 were borderline, 6 operable but for various reasons were not operated upon, as already mentioned. Of these 85 cases, 31 are living and 54 have died. As, however, some of these living cases have only been treated for a few months, the real facts are better expressed by taking those cases which were treated between May, 1921, and May, 1924.

Of 58 inoperable cases, 10 are living after one year or more—making 18.9 per cent. Of these 10, 1 has lived for 48, 1 for 43, 1 for 40, 1 for 21, 1 for 19, 1 for 17, 1 for 14, and 3 for 12 months.

Of 4 borderline cases treated, 1 has lived for 16 months.

Of 2 operable cases treated within the same period, 1 has been living for 12 months. Taking these three classes comprising 64 patients, there are 12 living for 1 year or more—making 18.7 per cent.

Of the 54 cases who have died, 14 lived for one year or more, 1 lived for 36 months, 1 for 31 months, 1 for 26 months. All the 14 were very materially benefited for a considerable time, and there is very little doubt that their lives were prolonged. Of the remainder 27 were benefited and made more comfortable for a time, but there is no evidence that their lives were prolonged. Of the rest, to 8 the treatment seemed to do no good whatever, and in the case of 5 it is quite possible that it actually did harm. Of the 64 patients, therefore, all but 13 received some benefit—making 80.9 per cent.

Of the 21 patients living less than a year, 4 are doing badly and going downhill; the rest appear well.

It is impossible to quote all the statistics available, but the following figures give some idea of the prolongation of life in some of the well known centres.

Last year the Radium Institute of Paris published the following figures. Of those cases treated in 1919, 1920, and 1921, 226 cases of carcinoma of the cervix were treated solely by radiological methods. Of these—

Of 21 cases of recurrences following operation, 2 are free from recurrences (one was treated with *x* rays as well), 3 are living but have recurrences, 16 are dead. Professor Régaud dogmatically states that a preliminary hysterectomy causes radium therapy to lose all the anatomical conditions for its efficacy, and moreover is liable to scatter malignant cells, and is therefore a great mistake.

Of 114 inoperable cases, 15 appear to be without any recurrences, the longest being three and a half years and the shortest one year. This equals 13.2 per cent.; 12.4 per cent. were greatly benefited.*

Of 67 borderline cases, 24 are still living, the time since the beginning of treatment varying from one year to three and a half years—making 35.8 per cent.; 35.8 per cent. were greatly benefited.

Of 24 operable cases, 11 (45.8 per cent.) are still living without any sign of recurrences, for times varying from one to three and a half years. In another 25 per cent. the disease disappeared locally.

The statistics published by the Radium Institute of Brussels are roughly as follows:

Operable Cases.—Of 14 operable cases treated by radiotherapeutic methods, 73 per cent. were living and free from signs of growth at the end of one year or more.

Borderline Cases.—Of 24 doubtful cases, 12 were free from any signs of growth after one year or more—making 50 per cent.

Inoperable Cases.—Of 24 inoperable cases, 8 per cent. were living and free from any sign of growth after one year or more.

The figures from the Radiumhemmet, Stockholm, are:

Of the 181 inoperable cases treated, 16.6 per cent. were well after five years.

Of the 36 operable and borderline cases, 40.5 per cent. were well at the end of five years.

The following list shows the number of cases treated in various years at the Memorial Hospital, New York, and the number living in May, 1921.

			Alive May, 1921.
Inoperable Cases:			
Of 15 cases	treated in	1915	None
,, 24 ,,	,,	1916	1
,, 41 ,,	,,	1917	None
,, 41 ,,	,,	1918	7
,, 69 ,,	,,	1919	23
,, 92 ,,	,,	1920	58
Borderline Cases:			
Of 3 cases	treated in	1916	2
,, 3 ,,	,,	1917	2
,, 17 ,,	,,	1918	5
,, 10 ,,	,,	1919	7
,, 12 ,,	,,	1920	8
Operable Cases:			
Of 1 case	treated in	1915	1
,, 3 cases	treated in	1916	None
,, 3 ,,	,,	1917	2
,, 4 ,,	,,	1918	2
,, 9 ,,	,,	1919	7
,, 14 ,,	,,	1920	6

RADIUM TREATMENT OF INOPERABLE CARCINOMA OF THE CERVIX.†

BY

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THIS communication is founded on a study of 40 cases of carcinoma of the cervix treated by the application of radium. The radium is supplied to the Cardiff Royal Infirmary by the Medical Research Council for research purposes, and inoperable cases of this disease have been treated in this manner since May, 1922.

Technique of Application.

The dose usually employed is 150 mg. of radium bromide, and it is inserted for twenty-four hours. Two tubes of 50 mg. each, sheathed in 2 mm. of platinum, are inserted into the cervical canal, and the others are distributed at the periphery of the growth according to the anatomical conditions. In some cases six tubes of 10 mg. each are inserted in a circle, but in other cases, when the condition is of irregular shape, the smaller tubes are inserted where they would appear to be most effective.

Difficulties may be met with during application. In a number of cases the cervix had ceased to exist as a protrusion into the vaginal vault, and was represented by a foul, bleeding, friable ulcer, and in these it was often very difficult to get a satisfactory grip of the friable material with a volsellum. In some cases the cervical canal was difficult to find, especially where the growth was hard and excavated. It is essential, however, to find and explore the canal with a sound to exclude the presence of an unsuspected pyometra. This condition was present in 12 cases, in none of which was there any pyrexia or marked uterine enlargement. If pyometra be found the cervix should be dilated and the uterine cavity drained before radium is applied. In the cauliflower type of growth and in some others showing exuberant fungation the cervix is scraped prior to the insertion of radium. In such cases the radium should be inserted immediately after scraping, so as to prevent dissemination of the carcinoma cells.

After removal of the radium a vaginal douche should be given, and repeated night and morning for three weeks. This is recommended by Hayward Pinch, and is a practical necessity in the prevention of adhesive vaginitis, which developed in certain cases where douching was omitted and rendered future applications and investigation very difficult.

At the first and each subsequent insertion a specimen of the growth is obtained for microscopic examination. As the condition improves it becomes progressively more difficult to fix the cervix, to get a proper view, and to remove a piece for examination, as, in the process of "healing," the carcinomatous cervix becomes more and more retracted up into the vaginal vault until only a little cicatrized area is present there, with the vaginal walls often slack below it.

Contraindications.—The main contraindications to the use of radium may be classified under these headings:

1. The presence of pyometra. This is discussed above; drainage is required before radium is introduced.
2. The presence of inflamed appendages. Radium is apt to set up an acute exacerbation in such cases.
3. Vesico-vaginal fistula. If this is present when the case is first seen radium is inadmissible, as an actue cystitis may be set up. If fistula develops in the course of treatment no further application should be given.

Histological Changes.

The histological changes in the carcinoma cells were at first puzzling and difficult to interpret; but after familiarity with the appearances had been acquired the changes were found to be of a more or less uniformly degenerative character in a large number of sections examined at different periods after treatment.

The first change observed was enlargement of the cells and of the nuclei. It was found in a number of cases as early as the third day, and usually by the end of the first week. In the majority of cases the cell cytoplasm and nucleus did not take up the stain as deeply as before. Here and there atypical karyokinetic activity was seen, shown by splitting of the chromosomes, often in an irregular manner. Oedematous infiltration also was seen in the stroma; the changes in both situations were attributed to oedematous swelling due to a vascular reaction to the damage caused by the radium. True degeneration was usually well marked by the end of the second week. The nucleus was affected first; karyokinetic changes were no longer seen, the definite nuclear structure was lost and it stained darkly, showing little or no structure, and having an indefinite margin. The cytoplasm of the cell also underwent granular degeneration, and vacuolation occurred, while the cell walls stained faintly. By the fourth week degeneration was well advanced and the nuclei had either disappeared or were represented by dark structureless masses in the interior of the cells. Degeneration of the cytoplasm had also advanced; it stained irregularly, and vacuolation was well marked. In some cases what was left of the nucleus was seen to be pressed against the cell wall by a vacuole which occupied the rest of the cell. The cell walls were very faint or indistinguishable, so that areas were seen here and there occupied by an irregularly stained mixture of degenerated cytoplasm and nuclei with vacuolation—almost the appearance of degenerated syncytium. At about this period the stroma began to show reaction. Around the epitheliomatous columns lymphocytic infiltration was marked, together with an increase of vascularity and a return of oedema.

These changes progressed until about the sixth week, after which little more effect on the carcinoma cell was to be expected as a result of a single application. The reaction of the stroma now became the main feature, and in time a condition of fibrosis was brought about; it did not occur until the cellular degeneration was advanced, and is to be regarded as a process of repair bringing about what amounted to scar formation. In some

* In 1919 and 1920 every single case that could reach the institute was treated. Since then the inoperables have been selected slightly, as it was found that when very far advanced the treatment did more harm than good. The authors consider that *x*-ray treatment only is better for these cases than radium.

† A paper read before the Fifth British Congress of Obstetrics and Gynaecology, London, April, 1925.

sections this fibrosis was universal and no remains of carcinoma cells were to be found, but in the great majority of sections taken as long as one year after infiltration lighter staining areas were seen occupied by the debris of cells and representing the degenerated remains of columns of carcinoma.

The stroma remained infiltrated with lymphocytes in the areas surrounding such masses of debris usually for several months. While these degenerative changes were well marked and easily observed, it was remarkable how fragments or debris of the carcinoma cells persisted even in cases showing clinical cure.

Clinical Changes.

The clinical changes were usually well marked, and consisted of all degrees of improvement of the three main symptoms—haemorrhage, pain, and discharge.

Haemorrhage was the symptom most completely controlled. Usually it ceased within the first ten days, and, in a case reacting satisfactorily, either did not recur or only an occasional slight loss occurred. This often happened even when subsequent physical examination showed some persistence of ulceration which might bleed on manipulation.

Cessation of discharge occurred in 18 cases, but in 6 others it was considerably diminished. It was usual for a patient to state that the bleeding had ceased and that she now had only a little discharge.

Pain was affected variously. In about one-third of the cases it was entirely relieved, in another third partially relieved, and in the remaining third either unaffected or aggravated. It is probable that such aggravation is due to pelvic fibrosis compressing the nerves, in spite of the fact that the majority of such cases showed clinical improvement and increased mobility of the uterus.

On *local examination* marked changes were found. Usually by the end of the first month the ulcerated surface had cleared up considerably, and in another month the improvement was such that ulceration had disappeared and the cervix was represented by a cicatrized dimple at the vaginal vault. By this time also the periuterine infiltration had usually cleared up, and a uterus which, at the first examination, was found to be firmly fixed was now more or less mobile with the thickening dispersed from the fornices. This would show that at least a certain amount of such pelvic infiltration is inflammatory.

Results of Treatment.

The following is a summary of the results of treatment in this series.

Of the 40 cases, 26 had one application of radium, and of these 3 are known to have died within a year, 4 failed to report again, and 2 developed vesico-vaginal fistula. Of the remaining 17 cases the clinical improvement in symptoms and on examination was so marked as to constitute clinical cure in 10; while in the remaining 7 discharge and pain have persisted in 5, with haemorrhage in 2, and the local condition shows unsatisfactory healing and some persistence of infiltration.

Ten cases had two applications of radium, and of these 2 died and 6 failed to report. The other 2 both showed marked local, general, and symptomatic improvement, being free of symptoms with the local condition cleared up beyond recognition and with increase of weight.

In 3 cases three applications were given, and one of these failed to report. The other 2, when last seen, were free of symptoms and the local condition was represented by a cicatrix in the vaginal vault.

In one case, in which carcinoma of the cervix developed subsequent to previous subtotal hysterectomy for a uterine fibroid, four applications of radium have been given; symptoms have ceased and the local condition has cleared up.

Of the 40 cases, then, 5 are known to have died and 11 have failed to report; vesico-vaginal fistula has developed in 2, and in 7 the clinical condition is unsatisfactory. Considerable improvement, amounting to clinical cure, has been obtained in 17 cases. It appears reasonable to estimate that of the 11 cases who failed to report 6 have died; on this estimate the total number of deaths would be 11, while if the whole 11 are to be counted as dead the total deaths would be 16.

The number of cases actually treated by radium is in excess of the 40 quoted, but none are included whose treatment commenced less than a year ago.

Conclusions.

The conclusion arrived at is that in inoperable carcinoma of the cervix we have in radium the most potent therapeutic agent yet to hand; that in practically all cases greater or less alleviation of the haemorrhage and discharge can be obtained; and that in slightly under 50 per cent. a condition of clinical cure is brought about. The action of radium is locally destructive to the carcinoma cells and produces such degenerative changes that further activity would appear to be out of the question. The line of further investigation is therefore by improved technique and, if necessary, by increased dosage to expose all parts of the parent tumour, together with any extensions, to the fullest effect of the radium rays so that cell activity may cease.

It is to be emphasized that this paper represents essentially a personal experience which happens to be in general accord with the experience of others who have used radium as a palliative in carcinoma of the cervix.

The cases considered were all inoperable according to the usual clinical criteria, and such controversial aspects of the matter as radium as an alternative to operation in any given case, preliminary radiation in the so-called borderline cases, or post-radiation hysterectomy in cases showing such local improvement and disappearance of infiltration as may tempt the surgeon to operate, have been avoided. Again, all the cases recorded were treated locally, and no attempt was made to treat extensions in the pelvis, as by the Daels and Schwartz operations. The recorded results of these procedures have not tempted me to resort to them.

It is important to estimate the exact position that radium should occupy in the treatment of carcinoma of the cervix, and it is as a contribution in that direction that this paper is presented.

I am indebted to Professor Sir Ewen Maclean for putting beds at my disposal for this investigation.

THE APPLICATION OF ULTRA-VIOLET LIGHT IN GENERAL PRACTICE.

BY

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AT the present time much is being written on the specialized application of ultra-violet light, but to my knowledge nothing has been recorded of its use in general practice.

As a result of six months' experimental work on friends and myself with various types of lamps, I selected a quartz mercury vapour lamp* of the atmospheric type. Such a lamp has the advantage of portability, and combines economy of current with powerful ultra-violet radiation. The expense of producing the light is not prohibitive, for the electricity used does not cost more than the average bottle of medicine.

The actual source of the ultra-violet light is the gaseous particles of mercury raised to a point of incandescence by the passage of an electric current. This constitutes the mercury arc. Until recently the only type of mercury vapour lamp was the vacuum lamp, but the atmospheric pattern I have used is much stronger in ultra-violet radiation and has a longer effective life. It is important to add that it is necessary at all times to guard the eyes by glass goggles, since the ultra-violet light causes severe conjunctivitis unless such protection is used. Once installed, the lamp appears to be indestructible, except by mechanical breakage. I have had one in use for over 2,000 hours and it is apparently as good as new.

Various tests have been devised for measuring the intensity of ultra-violet radiation. Amongst others, the bleaching of methylene blue (L. Hill) and the toxic property of ultra-violet light on bacteria introduced into the blood stream (Eidinow). The methylene-blue test, however, is of use only for indicating comparative strengths of ultra-violet light and does not determine the reaction of the individual. The blood test, useful in measuring the effect on the patient, is somewhat difficult to perform in general practice. A simple preliminary test can be made by exposing a small area of the palmar surface of the patient's forearm to the light for one minute at a distance of 6 inches. The resulting erythema is noted after twenty-four hours.

I would emphasize the fact that in 90 per cent. of the following cases I had previously tried ordinary therapeutical measures which were either ineffective or progress was extremely slow. Details given below are of my early cases when I used a 110-volt lamp. Lamps can now be obtained

* Such a lamp is manufactured by Messrs. Kelvin, Bottomley and Baird, in their works at Hither Green, S.E.13. A suitable stand was designed for me, and has proved very satisfactory for applying local and general irradiation.

up to 440 volts. The room temperature was maintained at 70° to 75° F.

Ulcers.—All cases treated have responded after varying periods; one worthy of note was a blacksmith's striker, who did not lose a day's work while undergoing treatment. The following is a typical case: Indolent ulcer of six months' standing in a girl aged 17. After nine weekly irradiations, beginning with three minutes at a distance of 10 inches and increasing to fifteen minutes at 6 inches, the ulcer was completely healed.

Eczema.—Exposure to the lamp produces very rapid reaction; at first the itching and discharge is increased, but this quickly gives way to new skin formation and complete relief from pain and irritation. A typical case was that of a cabman with severe eczema of the right leg who had been treated medicinally for some weeks with no good result. His leg was irradiated weekly, beginning with five minutes at 10 inches. After seven treatments, finishing with ten minutes at 6 inches, the leg was healed.

Alopecia Areata.—Cases of this disease have been successfully treated after medicinal measures had failed; hair 1 inch in length may be seen six months after treatment. Healthy hair grows about 4 inches a year. Prolonged treatment is not always required. Fine hair often appeared on bare patches after the third treatment. In a typical case, in a woman on whom a patch of alopecia areata had existed on the back of the head for six months, I began with fifteen minutes at 12 inches. Four irradiations at intervals of a fortnight at a distance of 6 inches for fifteen minutes were sufficient to start the hair growing.

Sycosis.—In this disease both successes and failures must be recorded. A chronic case healed, but three weeks later broke down; this may have been due to the fact, which I discovered later, that he was using his old shaving-brush. On the other hand, a case of sycosis of the upper lip responded rapidly and healed after four treatments. A case which may be quoted as typical is that of a man, aged 52, whose upper lip had been infected for several weeks. The lip was irradiated on four occasions at a distance of 2 inches, commencing with three minutes and increasing to six minutes. Two sun-baths of the body were also given.

Lupus.—Three instances of lupus have come under my notice in the past twelve months. All made excellent progress under the treatment. One has healed, the others are approaching that condition. These patients have had weekly irradiations.

Burns heal very quickly as compared with ordinary medical treatment, often showing healthy epidermis in half the time usually required.

Psoriasis.—I feel diffident about mentioning this disease, but results would appear to show that ultra-violet radiation is very valuable in the treatment of this disorder. Local patches are rapidly removed, but where the disease is general a long course of treatment is essential.

Sciatica.—Six to twelve treatments would appear to give complete relief; even long-standing and acute cases respond; one patient who had been fourteen weeks in bed returned to work after six irradiations. One case only was unrelieved—a man, aged 63, who had been ill for six months. He, however, had only three treatments. A typical case is that of a man, aged 37, who had had sciatica of the left leg for fourteen weeks. At the first exposure he was given three minutes at a distance of 5 inches; the pain was relieved. Six other irradiations were given at weekly intervals, the time being increased to fifteen minutes at the same distance.

Local Tuberculous Conditions.—Tuberculous knees, glands, and hip, and an anal abscess have all responded to treatment. A patient with a tuberculous hip who has been a cripple for eight years is already, after six irradiations, walking and able to go out alone, which she had not attempted to do for three years.

Chorea.—I have found the ultra-violet radiation very useful in the treatment of chorea. A patient had had the disease for five consecutive years, often being confined to bed for as long as three months. She had weekly sun-baths, and was kept up and about last year, although pregnant. At first she was given small doses all over the body, and later the dose was increased until she could stand as much as an hour at a time. Whenever the chorea appeared to be starting extra baths were given. She bore a strong healthy child, although she had miscarried twice previously.

Rickets.—Children with rickets always respond well to ultra-violet radiation. One child who, on an average, was having fits twice a week, due to the disease, has not had a return since its first sun-bath. In another case—a male child aged 5 months—I began with five minutes' radiation over the body at a distance of 18 inches. The bath was repeated twice a week, the time being gradually increased to fifteen minutes. He was treated for three months.

Rheumatism.—The chronic rheumatic patient appears to derive considerable benefit from ultra-violet light; it certainly seems to relieve rheumatic patients of pain and stops the progress of rheumatoid arthritis.

From the above cases it may be concluded that ultra-violet light is not only useful to the tuberculosis and child welfare medical officers, but also to the general practitioner in his daily work. The form of apparatus I have used can be fitted comparatively easily in any surgery, and, provided the doctor gives his personal attention and exercises considerable patience, he will soon obtain good results.

Ultra-violet light is by no means a panacea for all ailments, and in some of the diseases I have treated it simply replaces a more painful and cumbersome method by a pleasant and easily applied remedy. I think also that it often acts quicker than some of the older methods, allowing patients to go on with their work or return earlier to work than otherwise. Especially do I recommend it to the practitioner in an industrial area where the worker, hidden between walls or under glass all day, is hardly ever subjected to the ultra-violet rays of the sun, and is therefore more susceptible to ultra-violet action.

There is little doubt that a general sun-bath stimulates the average person if it be given wisely. In my opinion, on no account should a patient be allowed to treat himself, as I have seen some very bad effects from overexposure. The artificial sunlight bath appears to act on the general metabolism of the body—the appetite improves and the mental outlook brightens. This is particularly the case, of course, in large towns and industrial districts such as that in which my own practice lies. During the winter months I find it a most valuable asset.

ACCENTUATION OF A "MITRAL MURMUR" BY A TEMPORARY TOXAEMIC CONDITION (ACCOMPANIED BY TEMPORARY NYSTAGMUS).

BY

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CONSULTING CARDIOLOGIST, KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION.

THE patient in this case was a boy, aged 14 years and 10 months, an indoor pupil of the Royal Cambrian Institution for the Deaf and Dumb. His deafness is congenital, and it may be of interest to state again that nearly all cases of congenital deafness have hearts with normal sounds, whereas the majority of acquired cases have some adventitious cardiac sounds. My experience is that the acquired cases are generally associated in their origin with some specific feverish condition, when either through some inflammatory condition of the heart the circulation of the blood in the region of the middle ear becomes enfeebled, or through some coinciding inflammation of both heart and ear the local tissues are irretrievably damaged.

For such a reason it may be of interest to mention that when this boy, in March, 1918, at the age of 8, was first medically examined by me his heart sounds were normal, but when I re-examined him in March, 1919, he had what is usually called a systolic mitral murmur. Between these two examinations (namely, in November, 1918) he had a very bad attack of influenza. The mitral murmur at each periodical examination did not become more marked, but rather seemed to be, if anything, less noticeable. Slight distinctions in quality and quantity of heart sounds are, however, very difficult to estimate. At any rate, he did not suffer at all from an impediment to the circulation of his blood, and his activities were quite unimpaired.

On December 19th, 1924, there was a Christmas tree at the institution, when this boy indulged unduly in the good things on the table. About an hour after the feast was over he fell down, and was thought to have hit his head. He became pale, pulseless, and collapsed, and the stomach was emptied of all its contents. Before I arrived he had been given a small quantity of brandy, but neither this nor any water could be retained. When I examined him there was no evidence of any cut or bruise on the head, nor did there appear to be any soreness on the following days. He was quite unconscious, the pupils were considerably dilated, and he had marked lateral nystagmus. The temperature was 100° F., and the pulse (120) was very soft and feeble. I found a very diffused impulse beat, a slight increase of the cardiac dullness, and a marked mitral murmur over the whole cardiac area. As he was quite quiet and in no pain, with only a very slightly raised temperature, I ordered him to be kept warm with hot-water bottles, and watched during the night.

The next morning some amount of consciousness had returned, the nystagmus was less marked, the pulse slightly stronger, but he was still very pale and the tongue flabby. The heart's impulse was still considerably diffused and the murmur very marked. He was ordered 3 grains of calomel (which had the desired effect), and subsequently was given three drops of Condy's fluid in water every four hours. In two days the nystagmus had disappeared, the pulse tone was restored, the tongue and appetite were good, whilst the impulse was nearly normal. The next day he was allowed to be taken home for the holidays, with a note as to the condition of things to the medical officer of the education authority.

After his return from the holiday (when the treatment consisted entirely of rest) I found the heart conditions normal, save for a slight mitral systolic murmur, and the reserve power of the heart good, whilst there was no evidence of any nystagmus.

The presence of this temporary nystagmus is of considerable interest and importance, for in my opinion it helps to emphasize the toxaemic nature of the whole attack—the nystagmus, like a vertigo, arising from some gastric poison. The collapsed and pulseless condition can be considered due to a toxaemia, whilst the stomach disturbance, together with the beneficial result obtained by means of calomel, seems to confirm a gastric origin. Gastritis of such a nature is usually associated with signs and symptoms classified under the head of urticaria—an irritable condition of the skin resulting in rapid exudation of serum or lymph; an acute labyrinthitis causing vertigo; an acute injection of the bronchial mucous membrane causing asthma.

In this case there was a markedly diffused impulse and an extensive accentuation of the mitral systolic murmur. This marked diffusion of impulse is explainable by a rapid exudation of fluid into the pericardial cavity, which accounts also for the increase in the area of cardiac dullness. That this pericardial fluid is subject to variations needs no proof, but to prove definitely when and to what extent those variations occur we have to fall back on symptoms. Any disturbance of the intrapericardial conditions is necessarily associated with very alarming symptoms, and of such a nature as was found in this patient.

Normally one finds 4 to 8 c.cm. of pericardial fluid present *post mortem*, generally lying in the most dependent part of the opened sac, but that is no evidence of the position or conditions of the fluid during life. In 1915 I drew attention to the fact that during life the intrapericardial pressure is negative to the extent of 6 to 8 cm. of water, and the result of this negative pressure is by suction action to keep the pericardial fluid at an equal thickness all over the surface of the heart.

For an organ like the heart, in, as it were, perpetual motion, a great essential is proper lubrication, which is supplied by the pericardial fluid, right both in quality and quantity; but should a toxaemic condition occur suddenly, with a rapid exudation into the pericardial cavity, the lubrication is disturbed and the motion of the heart interfered with to a serious extent. Evidence of such an exudation into the pericardial cavity is supplied in the case here recorded by the markedly diffused cardiac impulse.

Heart disease has been recognized as an entity for barely one hundred years, so that whatever tradition exists cannot be above criticism, especially of a constructive nature. In my opinion a great wrong has been done to the science of cardiology by depicting on cardiograms the "exact" position of a sound or murmur, implying a scientific exactitude for what is really a matter of individual judgement.

Let us for the moment cease to consider the cause of the heart sounds, and concentrate on the conditions necessary for their conduction to our auditory apparatus. The heart sounds have to pass through the pericardial fluid (normally a thin layer) as well as the chest wall. With a rapid exudation of fluid into the pericardial cavity there must be a considerable modification of the conducting conditions, to prove which one need only refer to the fact that in a case of marked pericardial effusion the heart sounds are not heard. Since fluid is a good conductor of sound we should expect the heart sounds to be readily transmitted, but the reverse is proved to be the case. The "energy" transmitted from the chestpiece of a stethoscope to the ears is the same as that transmitted from the chestpiece of a cardiograph to the tambour and "pen" for the production of the heart curves or waves on the moving roll of paper. The "heart curves or waves" therefore represent on paper what is heard by the ear—that is, the "heart waves" represent the heart sounds.

In pericardial effusion the "heart waves" are reduced to a minimum, and so also are the heart sounds; in other words, there is so little movement of the pericardial fluid that no movement is recorded on the cardiogram.

Is the diminution of this fluid motion associated with the disappearance of the heart sounds? Were the sounds produced in the heart they would be conducted all the more readily with such a large quantity of fluid; in other words, are the heart sounds produced normally by the fluid in the pericardial cavity?

Watson, to whom belongs the credit of being a pioneer in the realm of cardiology, dogmatically asserts that the first sound of the heart is due to the contraction of the heart muscle—"because, gentlemen, you all know," he tells us in his lectures, "that a muscle when it contracts produces a sound." But a muscle when it contracts produces no sound, so that the heart sounds cannot be due to the contraction of the heart muscles. The vibration of the valves has been asserted to be responsible for many heart sounds, but is it possible to believe that a thin membrane, of which the valves are composed, can be strung so taut as to cause such a loud-sounding vibration as evidenced by the heart sounds? Truly, when the valves are affected the sounds are affected, but the more diseased the valves the less they are capable of vibration, although coincident with a marked increase in volume of sound. When, however, the valves are affected the intrapericardial conditions are also considerably modified, and I have drawn attention to the fact that in heart failure the intrapericardial pressure has become atmospheric with a consequent loss of suction action whereby the lubrication of the heart is greatly disturbed.

It is now generally agreed that the end comes in heart disease, not by valve leakage, but through failure of the myocardium, which to act satisfactorily must be properly lubricated with pericardial fluid of the right quality and quantity under proper conditions; but, as I have proved by means of the manometer, those pericardial conditions are not normal in death due to heart disease.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

GALL STONES IN A GIRL AGED THIRTEEN:

CHOLECYSTOTOMY, REMOVAL OF FOUR STONES: RECOVERY.

THE memorandum by Dr. R. S. Woods (BRITISH MEDICAL JOURNAL, March 21st, p. 552), describing cholecystectomy in a male aged 18, has stimulated me to record this case.

I have not attempted to search the literature, but Walton (*Annals of Surgery*, July and August, 1911) gives the following table showing the age at time of operation in the 409 cases upon which his paper is based, and the ages at which symptoms first appeared.

Age at Time of Operation.		*Age at which Symptoms Appeared.*	
Age.	Number.	Age.	Number.
1–10	0	1–10	3
11–20	0	11–20	27
21–30	26	21–30	57
31–40	68	31–40	122
41–50	117	41–50	101
51–60	123	51–60	67
61–70	63	61–70	27
71–80	11	71–80	5
81–90	1	81–90	0

He quotes a paper by Still in which records of twenty-three cases in young children (ten of them stillborn and young infants) are collected. Nevertheless, the operative removal of gall stones at the age of 13 must be sufficiently rare to be of interest.

I was asked to see a girl, aged 13, in consultation. Her doctor informed me that some months previously she had had cystitis accompanied by *B. coli*. For about eighteen months she had had frequent attacks of severe abdominal pain and vomiting. These attacks usually came on at night. She had had an unusually severe attack starting at 2 a.m. on March 21st, 1920. When I saw her, on the afternoon of March 23rd, the pain, now much less severe than it had been, had settled in the right hypochondrium and right iliac fossa. The abdomen was normal except that the right lower rectus was somewhat rigid.

I diagnosed recurrent appendicitis. As the present attack had subsided I arranged to operate, and on March 27th, 1920, opened the abdomen, using Battle's incision, and removed the appendix. It contained a concretion and two threadworms, and showed a stricture near the tip. As, however, it was hanging down in the pelvis I was not satisfied that it accounted for the pain in the hypochondrium. I therefore explored further and found to my surprise a large gall bladder containing stones. I enlarged the incision, opened the gall bladder, and removed four large stones.

No stones were felt in the ducts. The gall bladder was drained and the abdomen closed. The stones were roughly round, but showed from one to three well marked facets on each. The diameter of the smallest was one-third of an inch, of the largest half an inch. They were of the laminated bile pigment and calcium type.

The patient made an uneventful recovery and left the nursing home quite well.

Plymouth. C. M. KENNEDY, F.R.C.S.Eng.

ULTRA-VIOLET THERAPY.

THERE are still so many gaps in our knowledge both of the theory of ultra-violet therapy and of the physiology of the suprarenal glands that, at the risk of calling attention to a phase of their relationship which may have already been recorded, I venture to send the following note:

M. H., male, aged 12½, has suffered for nine years from attacks of bronchial asthma of moderate severity, induced apparently by errors of diet, cold, erupting teeth, fatigue, and excitement. Many forms of drug treatment have been tried without success, until quite recently, when adrenaline was tried and found to act as a specific. He had his first dose of light (two minutes' exposure to K.B.B. air-cooled lamp at 14 in.) at 7 p.m., and developed an attack of asthma early next morning. At 9 a.m. he was given a dose of adrenaline and it was noticed that the erythema was much less developed in him than in his younger brother, who had received the same dose of light at the same hour. Within half an hour the asthma had passed off, and at 12.30 he remarked that his skin was itching a good deal; the erythema was found to be that of a mild second degree, little if anything less than his brother's.

It appears to be a reasonable deduction that the skin's reaction to light makes a demand upon the suprarenals, which in this case temporarily exhausted them and thereby induced an attack of asthma; and that the small dose of adrenaline relieved the latter and enabled the reaction to be completed. Incautious exposure to sunlight of patients with active tuberculosis is well known to induce exhaustion and rise of temperature, but these effects have generally been attributed to the heat rays. This case strongly suggests that a truer rationale of the reaction would attribute the effects to suprarenal exhaustion, and affords a reasonable prospect that adrenaline, given at the time of an exposure to light, would safeguard these patients from such untoward results, just as it does in the case of M. H. At the same time it explains the good results claimed for the ultra-violet therapy of high blood pressure.

London, N.6. F. TALBOT, M.R.C.S., L.R.C.P.

JEJUNAL ULCER.

IN view of the recent correspondence as to the advisability of performing gastro-enterostomy at the same time as closure of a perforated duodenal ulcer, the following case would seem to be of some interest.

G. V., an iron-worker, aged 41, had been suffering from abdominal pain for eight months, when he underwent an operation for perforation of a duodenal ulcer in May, 1923. The surgeon who operated, besides suturing the perforation, performed posterior gastro-enterostomy. Recovery was uneventful.

For three months the patient did well, but after that time he began to complain of severe pain, and to lose weight. He was first seen by me in August, 1924. *X*-ray investigation showed both the pylorus and the gastro-enterostomy orifice to be functioning. He was seen in consultation by Dr. A. E. Barnes of Sheffield, who diagnosed jejunal ulcer. I operated in March, 1925, and found a large indurated jejunal ulcer, the crater of which was as large as a halfpenny, the base being formed chiefly by the transverse colon. The ulcer perforated as soon as the manipulation was begun. The ulcer was excised with the first eight inches of the jejunum, the opening in the stomach closed after excising the indurated parts, and the divided jejunum joined end-to-end with the duodeno-jejunal flexure. The pylorus was found to be quite patent, and there was no sign of the former duodenal ulcer. Recovery has, so far, been satisfactory.

It would appear to be a fair assumption that if suture of the perforation had alone been carried out at the first operation in this case the patient would have been saved the necessity of further interference.

W. STANLEY WILDMAN, F.R.C.S.Eng.,
Honorary Surgeon, Rotherham Hospital.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

BRIGHTON DIVISION.

A CLINICAL meeting of the Brighton Division of the British Medical Association was held at the Royal Alexandra Hospital for Children on April 23rd, when Mr. G. MORGAN, consulting surgeon to the hospital, was in the chair.

INTUSSUSCEPTION.

Mr. J. R. GRIFFITH read a short paper on intussusception. The majority of cases of this disease occurred in children under 2; the patient was usually a boy, and was healthy and robust. As a rule the diagnosis was unmistakable. The attack came on suddenly, often after an attack of diarrhoea; it began with agonizing colic, the bowels emptied themselves and the patient vomited, the legs were drawn up, and the breath came in little gasping cries. The spasm passed off and was repeated. Blood-stained mucus began to drain from the rectum, and the spasms became more and more frequent until the pain became continuous. On examination a sausage-shaped swelling was detected, lying across the abdomen above the umbilicus; sometimes the apex could be felt on rectal examination. All cases, however, did not conform to this type, and sometimes it was by no means easy to make a diagnosis. It was not uncommon to find the child sleeping peacefully, with nothing but the history to suggest that there was anything wrong. The lump might appear to be absent at one time, although it was clearly evident both before and after. Occasionally no history could be obtained of the passage of blood and mucus; in these cases there was no congestion, and the intussusception was easily reduced. Operation directed towards the complete reduction of the intussusception was the only rational form of treatment, and it must be performed at the earliest possible moment, before congestion was followed by loss of vitality. Therefore, where any question of intussusception arose the child was always examined under an anaesthetic on the operating table. An abdominal and a rectal examination made it easy to decide whether the abdomen should be opened or not. With regard to the operation, a right paramedian incision was used; the intussusception was reduced as far as possible inside the abdomen, the last part being always delivered in order to make sure that it was completely reduced. This was sometimes difficult owing to thickening and oedema of the apex, but unless reduction was complete the condition would almost inevitably recur. In the case of gangrene of the bowel resection appeared to be hardly ever successful.

In the discussion which followed Mr. G. MORGAN called attention to the rise of temperature which usually followed these operations; this was due, in his opinion, to the absorption of toxins liberated from the congested bowel on the relief of the obstruction. Mr. L. A. PARRY then described a case in which pain was completely absent throughout the attack. After much doubt and discussion the abdomen was opened, the intussusception was found and reduced, and the child recovered. Mr. M. FITZMAURICE-KELLY described two unusual cases under his care during the past year; in both the apex was formed by an inverted Meckel's diverticulum.

MISCELLANEOUS CASES.

Mr. M. FITZMAURICE-KELLY showed three cases:

1. A case of old tuberculous disease of both hip-joints and the left knee in a girl aged 13. The case had been shown at a previous meeting; the left hip and knee were then fixed in good position, the right hip dislocated, and the limb flexed and adducted 50 degrees. An arthroplasty of the right hip by Jones's method was performed, and the limb was now straight, with some 30 degrees of movement in the direction of flexion. It was hoped shortly to start the child walking in a calliper splint.

2. A case of incisional hernia of the right semilunar line, 4 in. by 1 in., closed by Gallie and Le Mesurier's method, two strips of fascia lata a foot long and 1/4 in. wide being used to close the opening. The resulting scar was firm.

3. A case of obstetrical paralysis in an infant, treated on a platform splint.

Dr. W. BROADBENT showed two cases:

1. A case of spontaneous gangrene of the arm and leg in a child, necessitating amputation of both limbs.
2. A case of coeliac disease which was cured by the administration of pancreatic extract.

Dr. FLORENCE M. EDMONDS showed a case of Schlatter's disease, cured with no special treatment beyond the avoidance of excessive exercise.

ASSAM BRANCH.

TREATMENT OF LEPROSY BY METALLIC SALTS.

AT the annual meeting at Jorhaut of the Assam Branch of the British Medical Association on March 2nd Colonel F. J. PALMER delivered an address on the treatment of leprosy by metallic salts.

Colonel Palmer began by stating that in Ceylon and South Africa the value of chaulmoogra oil and its derivatives had been somewhat discounted, whilst in Muir's most recent statement of the question there was not cited, he believed, one single case of the cure of advanced leprosy. The interpretation of the results of treatment in leprosy was more difficult than in any other condition, except the ferment treatment of cancer. Some eighteen months previously Colonel Palmer had given copper sulphate for some weeks in daily half-grain doses, by the mouth, to a patient with leprosy of the hand and a very swollen finger. The patient then disappeared for some months; he was subsequently found to have improved very much. In another case of a leprous ulcer over the patella, with the bone exposed, the patient improved rapidly under the oral administration of copper sulphate in daily half-grain doses, and eventually returned to work, the ulcer having completely healed. The treatment was continued in periods of three weeks at a time with intermissions of a week or fortnight, and focal reactions were observed to follow the doses. Other salts of copper were then tried and other routes of administration. For intravenous use a combination of copper sulphate with sodium citrate was found most useful, and copper citrate was also found the most suitable salt for intramuscular injection. In addition to reactions in leprous sores, after-treatment reactions might occur in places which were not apparently the site of leprous infections. Colonel Palmer thought these might be due to (1) reactions occurring in lesions so small as to have eluded observation; (2) the toxin being liberated from dead and degenerated bacilli and acting on nerve fibres running to certain skin areas; (3) reactions appearing in elusive areas of infiltration in the tissues along the course of nerves supplying the affected areas. He preferred the first and third explanations, and considered that such reactions illustrated the widespread invasion of the body tissues by leprosy. This disease seemed to be one of low infectivity and extreme chronicity, many patients showing a high degree of resistance to it. Scars of former ulcerations sometimes reacted to treatment, suggesting that the bacilli remained alive but dormant in the cicatricial tissue. The action of copper citrate had been studied by him for nine months, and that of bismuth tartrate for three months. The former was given intravenously in fortnightly doses of 1½ grains; the latter, also intravenously, in 2-grain doses fortnightly. No such loss of effect was noted after repeated doses, as in the case of antimony salts. No untoward incident had resulted from these injections, no evidence of optic atrophy being obtained, though two cases of transient jaundice had occurred. No albuminuria had followed the copper treatment, but there had appeared a temporary trace of albumin in the urine of one patient under bismuth, and this metal had also produced soreness of the mouth and teeth. A slight febrile reaction seemed to follow most injections and might persist for some days.

Focal reactions were most readily produced in the following order: (1) areas already tending to break down; (2) surface infiltrations of the skin; (3) old infiltrated areas, or those below a nerve lesion; (4) deeper infiltrations of the skin; (5) an old firm white scar in a well vascularized region. In such areas the scanty dormant bacilli had been walled in by a natural protective reaction, and the cicatricial barrier probably offered great resistance to the action of substances in the blood. Early nodular cases were the most amenable to treatment, and cases with extensive infiltration of the feet and legs the least so. No attempt had been made to reinforce the action of these drugs by diet or by dressing the sores. Colonel Palmer then referred to an article by Professor Philippo Rho in the *Journal of Tropical Medicine and Hygiene* for December 1st, 1924, on the effect of cyanide compounds of copper, which tended to confirm his own observations. He also gave clinical details of the treatment of eight patients, and his final conclusions were as follows: (1) that copper and bismuth salts were two of the most powerful agents yet introduced for the treatment of leprosy; (2) that these salts were very inexpensive at present; (3) that they both produced focal reactions in leprotic tissues, earlier or later, according to frequency and dosage; (4) that such reactions appeared to be curative, and that even advanced cases had improved so as to justify the hope that final cure was not far off; (5) that with increasing knowledge speeding up might be possible; (6) that cure could only occur through a series of reactions, which might be severe in advanced cases and make the patient appear to be worse temporarily; (7) that the potentialities of the oral administration of copper, and to a less degree of those of intramuscular bismuth, were worthy of trial.

Reports of Societies.

MODIFICATION OF COW'S MILK IN INFANT FEEDING.

AT a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine on April 24th, the President, Dr. H. C. CAMERON, in the chair, Dr. LEONARD FINDLAY opened a discussion of the question whether modification of cow's milk was necessary in infant feeding.

Dr. Findlay, referring to the generality of infants, had no hesitation in answering the question with a negative, unless boiling was considered as a modification. He thought that raw milk ran so many risks of contamination that this danger should not be inflicted on children under 5 years, and pointed out that the ideal—a perfectly clean milk—was economically impossible of attainment. In America, recently, five cases of bovine tuberculosis had occurred in infants fed entirely on grade A milk from a most reputable dairy. Boiled milk had the advantage of being more digestible than raw milk, and only lacked the antiscorbutic vitamin, which could easily be added. In pathological states, such as fat intolerance, some modification of cow's milk was necessary, but for the average infant Dr. Findlay maintained that whole cow's milk was the best substitute for breast milk. The difference in composition between human and cow's milk would seem at the first glance to warrant modification, and the chief discrepancy was that between the two protein figures. Protein was always dependent for its action upon its constituent amino-acids. The intramolecular composition of the amino-acids of different proteins varied so greatly that an effective modification was impossible in the present state of our knowledge. Secondly, there was proof available that children were well able to digest whole milk; experiments on their metabolic balance had demonstrated this satisfactorily. There was, moreover, no evidence that a marasmic infant was less able to thrive on whole cow's milk than a normally nourished infant. Dr. Findlay had fed infants on diluted milk, peptonized milk, and citrated milk, but had always returned to the use of unmodified cow's milk. The vast majority of infants throve on a diet of whole cow's milk. He therefore felt that the modification of cow's milk was uncalled for, except in certain pathological states, and possibly occasionally for infants under 3 weeks old.

Dr. ERIC PRITCHARD maintained that the modification of cow's milk was an absolute physiological necessity. Breast milk was the most perfect assemblage of the elements of nutrition, but in cow's milk these elements were in different proportions. The milk of various mammals differed

in metabolic properties, and the substitution of one by another was, therefore, a matter of some moment. Recent research in biochemistry had shown that there was an optimum requirement of each element; breast milk contained thirty such elements. Although the infant's stomach had great powers of adaptation and a very high degree of tolerance, yet the closer the composition of a food attained to the optimum the better would be the results obtained. The problem was difficult, and could not be met by administering undiluted cow's milk. Of the methods of modification in use at present the calorie basis of calculation did not entirely meet the case, because the biochemical reactions, hormones, and other imponderable molecular units were not considered. The percentage method of modification was open to the objection that only three of the thirty elements in breast milk were considered, the remaining twenty-seven being entirely ignored. These elements were present in cow's milk, but not in quantities representing the optimum. The calf grew at three times the rate of the infant, whilst the ratio of protein in cow's milk to that in human milk was two to three times as great. The carbohydrate in the calf's diet was supplemented by the grass it ate—a fact frequently overlooked. The protein ration necessary for adults was a matter of controversy, but it was possible to find an optimum ratio for infants. That cow's milk was less digestible than human was surely an argument for substitution, not for the feeding of the indigestible protein in excess, as was the case when whole milk was given. In apparent support of Dr. Findlay's argument was the fact that in diluting the protein the other important elements were diluted also, such as iodine, ionic calcium, iron, lecithin, cholesterol, and water-soluble vitamins, but Dr. Pritchard believed that this was an argument in favour of more scientific modification of milk. Children fed on whole milk survived because of their great power of adaptability, but there was no doubt a considerable hypertrophy of the stomach in such cases. It had recently been found that the *p*H for optimum gastric digestion should be 5; whole cow's milk required five times as much gastric juice to produce this figure as did breast milk. This fact explained the resultant hypertrophy of the stomach found in infants fed on whole milk. Dr. Pritchard had modified cow's milk by acidifying it with hydrochloric or lactic acid with successful results. It had been admitted even by Dr. Findlay that for some ailing babies some modification was necessary. It was Dr. Pritchard's contention that research in biochemistry should not be ignored, and that those who habitually modified milk for normal children would have greater facility and resources in dealing with ailing children.

Dr. HUGH THURSFIELD said that the doctor was expected to know the answer to the question—What, failing breast milk, was the optimum food for infants? It had been found from repeated analyses of breast milk that the average differed notably from the extremes, not only in different women, but in the same woman from day to day, and even from hour to hour. Could breast milk then be taken as a standard in modifying other milks? Clinical experience had also shown that the so-called humanized milk had not been so successful as had been expected. In order to have some idea as to what food healthy infants did thrive upon, Dr. Thursfield had made inquiries about the children in the surgical ward in the Hospital for Sick Children who looked healthy; he was informed that the children were fed upon the same diet as they had had before admission. Their fitness for operation had been achieved by adherence to their previous diet, however far this might have departed from theoretical dietetic standards. It was certainly worthy of note that, provided an infant was healthy, it did not seem to matter very much what diet it was given. The power of adaptation was great, and the body had the ability of getting rid of unnecessary substances. He had found that children deprived of breast milk took unmodified boiled cow's milk, protected by an antiscorbutic, with enjoyment, and digested it well. The advice of London consultants was most frequently asked for children already ailing from some cause or other; apart from infections, this want of health was most generally caused by disproportions in the feeding. It thus became a necessary part of the treatment to modify the food with regard to the particular constituent at fault in the previous diet. It was generally believed by the laity that there was some optimum food for infants which should be defined by the doctors. In his opinion there was doubtless such an optimum for each individual infant, but the average best at present attainable was represented by boiled cow's milk for the generality of healthy infants.

Dr. R. C. JEWESBURY believed that it was absolutely essential to modify cow's milk, taking the average constitution of breast milk as the standard. He considered that there was very little variation in the composition of breast milk if the breasts were completely emptied on each occasion. The method of percentage feeding on this basis, started by Sir Frederick Truby King in New Zealand, and used by himself and others in this country, had given every success. Dr. Jewesbury showed charts of the weight curves of infants who were much below normal until they were fed on a percentage modification of cow's milk, when they immediately began to gain and rapidly reached the normal curve.

The PRESIDENT remarked that it was in the nature of infants to grow and wax strong, and therefore great care should be exercised before accepting growth as a direct result of any particular diet. There might be said to be two schools of thought—those who started out with a foodstuff, and those who started with the infant's reaction to a foodstuff. Any modification could be regarded as a starting point from which to obtain information as to the reaction of the infant. To fix the best starting point should be the aim of clinicians. A certain number of infants would react badly to any modification. Advance could only be made by all investigators giving clear clinical pictures of the results. In his opinion infants fed on whole boiled milk were more stable than those fed on modified milks, though the latter might show more rapid growth. There were so many factors to be considered that they must recognize that no diet would ever confer health on all ailing babies.

THE sixth meeting of the Chelsea Clinical Society, held at St. George's Hospital on April 22nd, with Dr. GORDON LANE (President) in the chair, was devoted to the discussion of certain cases exhibited. Mr. B. WHITCHURCH HOWELL showed a case of malunited tibia and the excellent results obtained by simple subperiosteal resection. Mr. LAWRENCE ABEL showed a case of familial exostosis of the upper dorsal vertebrae. He also gave the history of a case of bilateral osteomyelitis of both tibiae, in which antilusin A had done much good. Dr. A. C. D. FIRTH exhibited a case of splenic enlargement associated with an increase in size of the liver; two cases of hypothyroidism, in one of which good results had been obtained with small doses of thyroid extract administered over a long period of time. He also showed a case of aortic disease with a Flint's murmur. The PRESIDENT demonstrated a case of acromegaly. Mr. ABEL showed, for Mr. P. P. COLE, a case of bony tumour of the breast, a recurrent lipoma, and a case of lipoma followed by a sarcoma. Dr. J. D. ROLLESTON concluded a most interesting evening with an exhibition of photographs of the rash of smallpox in various stages.

AT a meeting of the Devon and Exeter Medico-Chirurgical Society held on April 23rd, the President, Dr. E. J. TOYE, in the chair, Dr. W. GORDON showed two cases of diabetes. (1) In a married woman, aged 37, insulin treatment had been beneficial, but when Dr. Gordon later substituted raw pancreas for the insulin he had obtained equally good results. During intervals when the insulin or raw pancreas had been omitted the glycosuria and acetonuria returned. (2) In a boy, aged 11, glycosuria and acetonuria had disappeared after dieting alone; at no time had it been necessary to give insulin. Mr. R. WAYLAND SMITH read notes on and showed a case of fracture of the femur in a middle-aged man in whom there had been considerable overlapping of fragments and replacement had been very difficult. He had plated the fragments and made use of an anterior root by splitting the cruraeus. The operation had proved most successful, and in addition to the extension splint a self-exercising apparatus had been arranged so that the man, by means of pulleys, could constantly flex and extend the knee-joint. Mr. Wayland Smith also showed a case of tuberculosis of the caecum; the caecum and eight inches of ileum had been removed, and after a temporary "light up" in the chest the man was now progressing favourably as a

balcony patient. Mr. NORMAN LOCK showed a boy with a deep ulcer over the tibia, eight inches in length. The Carrel-Dakin method and treatment with nitric acid and vaccines had proved of no avail, but he was at last improving under ultra-violet ray treatment. *B. pyocyaneus* had been isolated from the ulcer. Dr. F. A. ROPER showed a case of tabes dorsalis with Charcot knee-joints; the left knee-joint had enlarged rapidly, and now presented an enormous deformity. The treatment was discussed, but apart from antisyphilitic therapy—already tried over a long period—the only suggestion offered was ionization. Mr. NORMAN LOCK, with Dr. MILLER MUIR, showed a girl, aged 6, who had had an inoperable spindle-celled sarcoma in the left side of the neck. After treatment with *x* rays the tumour had completely disappeared, leaving only a scar over the sterno-mastoid. The treatment commenced fifteen months ago, and Dr. Miller Muir had first tried radium without success; steady and slow doses of *x* rays had been of more value than the intensive treatment. Dr. R. SOLLY read notes on a case of bilharziasis, apparently contracted in Mesopotamia. He described the life-history of the parasite and showed slides prepared from the urine of the patient illustrating the ova and the release of the embryo.

Reviews.

COMPARATIVE PHYSIOLOGY.

IN the thoughtful and interesting book to which they have given the title *An Introduction to Recent Advances in Comparative Physiology*[1] Dr. HOGBEN and Mr. WINTER have dealt in a clear and pleasing style with a diversity of subjects, such as the fertilization of the egg, the development of the individual, the sources of vital energy, co-ordination, behaviour in animals, hereditary transmission, the material basis of inheritance, and the determination of sex. Other subjects of no less interest might be added to this list, such as the blood and circulatory and respiratory functions, the biological action of light and pigment, the production of light by living organisms, the swim bladder and its relation to audition and sense of position and equilibrium. A second volume might deal with such, and would be welcome.

While the attempt by Loeb and others to produce parthenogenesis or virgin birth by experimental means has been crowned with success, we are, say the authors, only on the threshold of a solution of the problem. One factor is proved to be the withdrawal of water from the egg. In dealing with the natural process of fertilization they point out that the sperm, when shed, becomes active in the presence of a certain degree of alkalinity and that there is a specific attraction emanating from the egg. This attraction is 100 per cent. less in the case of the sperm and eggs of hermaphrodites, and thus self-fertilization is very rare. The influence of egg extracts on the sperm is specific but not entirely so; it is destroyed by heating above 95° C.

In discussing development of the individual the authors produce evidence that bodily organization may be profoundly altered by external agencies; thus, the vestigial eyes of the blind cave salamander develop to normal size when the young are reared in red light, and monsters can be produced by acting on embryos with certain concentrations of various salts, by ultra-violet rays, etc. Strange varieties of goldfish are produced thus. Of paramount importance in the production of monsters are initial quantitative differences in cell activity. Susceptibility to external influences varies directly as the rate of metabolism in the parts of an embryo; larvae of a marine worm can be made small-headed by the early action of a cyanide salt and big-headed by the late action. The modern standpoint regards individuation, not as the outcome of a differential distribution of the hereditary determinants through cell division to different regions, but as a result of the reaction to external or internal environment. Thus in the development of the eye the retina is formed from the optic cup, an outgrowth of the brain, and the lens from the skin; if the optic cup is removed in a tadpole no lens develops, while if the optic cup is there any part of the skin grafted over it will form a lens.

The authors point to the fundamental fact that a considerable part in determining the condition of the individual is played by the presence or absence of stimuli which induce functional activity; for example, if fluid be introduced at considerable pressure into a dog's bladder the walls become thicker, simulate in microscopical structure the heart, and pulsate rhythmically at a rate of two hundred a minute.

The well known function of the thyroid in controlling the metamorphosis of tadpoles is of great interest in connexion with cretinism. Tadpoles fed on thyroid or given iodine metamorphose quickly into frogs which are the size of flies, while those deprived of their rudimentary thyroid or fed on any iodine-free diet lack the power to undergo metamorphosis. In tadpoles the rudiment of the pituitary gland is very accessible just above the mouth and can easily be destroyed. When this is done development of the thyroid is arrested and there is failure to metamorphose. Pituitary grafting, on the other hand, accelerates growth and metamorphosis in tadpoles. Thus is the uncertain evidence derived from very difficult experiments on mammals elucidated by comparative physiology. Another interesting example of this enlightenment is the discovery that while the banana fly can live and multiply on a suitable solution of salts, sugar, ammonium tartrate, and citric acid, it is necessary that its gut should teem with yeast. The yeast grows on the solution and the fly larvae obtain vitamins from the yeast and their nitrogen supply from the nucleoproteins of the yeast. Again, both larvae of blow-flies and a pulp made therefrom have, like the liver of mammals, power to split peptone into amino-acids, deaminize them with evolution of ammonia, and then with evolution of carbon dioxide produce higher fatty acids by synthesis of the deaminized acids.

Very interesting also are the authors' researches, which show that a minute dose of extract of the posterior lobe of the pituitary on injection darkens the skin of frogs by expanding the melanophores. Removal of the pituitary from the frog or salamander prevents darkening in response to light surroundings.

Enough has been said to show the nature of the discoveries which this book brings together.

THE BACTERIOLOGY OF FOOD.

THE origin and development of bacteriology is one of the wonders of modern science, and a remarkably comprehensive sketch of it forms the introduction to a book by Dr. CUTHBERT DUKES on *The Bacteriology of Food*.[2] He shows how, beginning with Pasteur's discoveries, scientists started to study the microbes responsible for various industrial fermentations; how the enunciation of the germ theory of disease impelled research in a new direction; how pathogenic microbes began to be identified, and new methods of disease prevention and treatment devised; how, apart from medicine, the value became appreciated of knowledge of the microscopic world in many human activities, including agriculture and dairying; and how the biologist has made methodical survey of this new province of life. But the study of bacteriology has been so absorbing and intensive in each of its several departments that the worker in one field has scarcely found time to look over the hedge to see what was being done in the next. Medical and agricultural bacteriologists, for example, are insufficiently acquainted with each other's work. A common meeting ground may be found in the domain of hygiene and public health, which includes not merely the examination of water and milk, but all that relates to food supply, food preservation, and food decomposition. Dr. Dukes puts before the reader information from the writings of workers approaching the subject from the various points of view—medicine, hygiene, agriculture, and industry in general.

In successive chapters he deals with the bacteriology of food preservation, water, milk, butter, cheese, canned foods, alcoholic beverages, and fermented foods. The last chapter is devoted to bacterial food poisoning, which is treated under two main headings—the Gaertner group and botulism. In introducing this subject Dr. Dukes comments on the

[1] *An Introduction to Recent Advances in Comparative Physiology.* By Lancelot Hogben, M.A.Cantab., D.Sc.Lond., F.R.S.Edin., and Frank R. Winter, M.A.Cantab. London: W. Collins and Co., Ltd. 1925. (Med. 8vo, pp. vii + 242; 20 figures. 25s. net.)

[2] *The Bacteriology of Food.* By Cuthbert Dukes, M.D., M.Sc., D.P.H. London: H. K. Lewis and Co., Ltd. 1925. (Demy 8vo, pp. x + 180; 25 figures. 7s. 6d. net.)

misconceptions which have arisen and still persist in the popular mind regarding the part played by ptomaines. These chemical substances are often present in putrefying meat and are highly poisonous when injected into animals, but seldom or never are they formed save when putrefaction is far advanced and the food altogether repulsive. Even if putrefying food is swallowed there is very little evidence that the ptomaines are then poisonous, for, like other organic toxic substances, such as snake venom and tetanus toxin, the poison is not absorbed by the digestive system. The ptomaine tradition, Dr. Dukes complains, hampers the progress of knowledge of food poisoning, for in almost every outbreak "the magistrate, coroner, and press rest satisfied with the familiar doctrine of ptomaines, whilst valuable time is lost and the living menace remains undetected." He insists, moreover, that the bacteria which cause food poisoning are a special group altogether separate from those that form ptomaines, and from the common agents of putrefaction. Following these preliminary observations, the author proceeds to discuss the Gaertner type of bacilli, and the *Bacillus botulinus*. He places the former in a group to which many other pathogenic bacteria belong, including the *Bacillus paratyphosus* A, B, and C, whilst in addition to the Gaertner group itself there is also a para-Gaertner group.

We trust we have sufficiently indicated the contents of Dr. Dukes's volume to inform our readers of its scope and assure them of its value. It is written forcibly and concisely, and in brief space gives important information and sets forth clear views with which every health officer ought to be acquainted.

MOTHERCRAFT.

THE fifth edition of the popular manual *Mothercraft*,[3] which is published by the National League for Health, Maternity, and Child Welfare, has been revised and enlarged. It consists of a selection of papers from various courses of lectures on infant care given under the auspices of the National Association for the Prevention of Infant Mortality by authorities on the subjects. Dr. Still introduces the volume with a quotation from Plato that "of all animals the most difficult to manage is a child," and reviews the history of the interest shown by civilized mankind in the welfare of children. The slowly dawning realization that mother instinct must be supplemented by mothercraft is developing into a conscious demand for knowledge in the minds of many thousands of mothers. Some special attention was given in the earlier half of the seventeenth century to the study of the child in sickness, but it has taken three centuries to bring home the truth that through a fuller knowledge of disease means of prevention are to be sought and found.

It is not possible to give the names of all the distinguished persons who have contributed papers. It must suffice to say that briefly, but very helpfully, the story of the care of the child is given in counsels of attainable perfection. Beginning with ante-natal care, which in reality dates back to the adolescent, the respective articles deal with pregnancy and childbirth, reference being made to syphilis in connexion with these periods. Other articles discuss the care of the newborn infant, breast-feeding, artificial feeding, and weaning. Then the care of the developing child is dealt with, including its food and clothing, with reference in special articles to the backward and nervous child. Separate articles are given to simple ailments, dental defects, skin troubles, care of nose, throat, ear, and eyes. Respiratory diseases and, more particularly, tuberculosis in mother and infant, are described. A final article on the law relating to maternity and child welfare is helpful and instructive.

The whole gives an illuminating exhibition of the state of preventive knowledge to-day. There are many gaps in this knowledge and much ignorance remains to be dispelled, but prevention is the watchword of the child welfare movement. The exceptional value of this little manual lies in this—that it contains the collective advice of many, distinguished in the profession, instead of the views of only one author.

[3] *Mothercraft.* Fifth edition, revised and enlarged. London: The National League for Health, Maternity, and Child Welfare. 1925. (Cr. 8vo, pp. xvi + 400; 5 figures. 4s. 6d., post free.)

EAR, NOSE, AND THROAT.

IN a volume recently published in Paris, Dr. G. DE PARREL[4] has collected a series of articles designed to bring certain recent advances in otology and laryngology to the notice of the general practitioner. No attempt is made at a complete exposition of these special subjects such as might be found in a textbook. Certain topics on the borderland are discussed in a helpful manner, and an attempt made to bring them into touch with general medicine. One of the most interesting and informative chapters is that dealing with congenital syphilis as it affects the head and neck.

As the author has only touched on certain topics apparently selected at random, the book cannot be used for reference; moreover, much that it contains is debatable and probably ephemeral, but many fresh ideas and novel suggestions are advanced, so that it may be read with profit by the practitioner and the laryngologist. The merit of the book lies in a certain breadth of vision, but much that is commonplace might have been omitted. The author certainly helps to avoid "myopie clinique," against which he warns the specialists.

The first edition of the *Manual of Diseases of the Nose, Throat, and Ear*, by Dr. GLEASON, appeared in 1907; the edition before us is the fifth,[5] and the book has been many times reprinted in the intervals between the various editions, so that its popularity is evident. It presents an account of laryngology, rhinology, and otology within the compass of a single volume of moderate size. The conditions commonly met are fully discussed, the appropriate treatment set out, and the lesser operations described. The attempt to bring the book up to date, however, is not entirely successful; this is a difficulty which becomes more pronounced with each successive edition of any textbook, unless, indeed, it be entirely rewritten. Nevertheless, this book remains a safe and useful guide to the student and practitioner in the recognition and simple treatment of ordinary diseases, but it does not now meet the requirements of the specialist in any of the three branches.

The third edition of GRÜNWALD'S textbook of diseases of the larynx[6] is one of the series of Lehmann's medical atlases. The first part of the text, which is in German, describes methods of examining the larynx, and the second part the pathology and treatment of its diseases. The great feature of the work is the coloured plates, which include histology and morbid anatomy as well as laryngoscopy.

AN OUTLINE OF ENDOCRINOLOGY.

BIG books on endocrinology have been fairly common recently, but smaller less numerous. Dr. W. M. CROFTON'S *Outline of Endocrinology*[7] belongs to the latter class. In 120 pages he deals, chapter by chapter, with the functions of the pineal, pituitary, suprarenal, thyroid, parathyroid, and thymus glands, the hormones of the gastro-intestinal tract, and the pancreas. His general scheme is to pass from the histology to the development, physiology, pathology, and therapeutics of each gland. In the fields of endocrinology there is plenty of room for difference of opinion, and we do not wish to dispute the stand which Dr. Crofton takes on many controversial questions, but merely remark that time may or may not justify his dogmatism. Since he wrote primarily for medical students he had naturally to be brief; but we think that the book would have been more useful if the author had added references to larger books and original articles, in order to direct the reader to places where he could consult other opinions or find a more exhaustive presentation of those Dr. Crofton proclaims.

[4] *O. R. L.: Oto-Rhino-Laryngologie: Documents pour les Praticiens.* Par G. de Parrel. Paris: A. Maloine et Fils. 1925. (Cr. 8vo, pp. 425; 86 figures. Fr. 20.)

[5] *A Manual of Diseases of the Nose, Throat, and Ear.* By E. B. Gleason, M.D., LL.D. Fifth edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company. 1924. (Extra post 8vo, pp. 650; 212 figures. 20s. net.)

[6] *Lehrbuch der Kehlkopfkrankheiten und Atlas der Laryngoskopie.* Von Dr. L. Grünwald. Dritte Auflage. Lehmann's medizinische Handatlanten. Band XIV. München: J. F. Lehmann. 1925. (Cr. 8vo, pp. viii + 312; 112 coloured illustrations in 47 plates, and 35 figures. G.M. 10.)

[7] *An Outline of Endocrinology.* By W. M. Crofton, B.A., M.D. Edinburgh: E. and S. Livingstone. 1924. (Cr. 8vo, pp. vii + 126; 49 figures. 6s. net.)

A TEXTBOOK OF HISTOLOGY.

ONE of the chief merits of Professor JORDAN'S *Text-book of Histology*[8] is that it is written by one who is actively engaged in teaching that subject. As a teacher, he knows that if an interest in the subject be aroused, the student will assimilate even the dry facts of a science much more rapidly and perfectly than if his interest had not been thus awakened. Professor Jordan, therefore, gives throughout the book short accounts of the functions or physiological meaning of the tissues under discussion. Hence we find the physico-chemical theory of muscular contraction, the myogenic view of the heart beat, the mechanism of the expulsion of the ovum, and so on. After all, when the tissues are being studied is the time to be told what they do. Doubtless, to achieve the same end—interest in the meaning of structural differentiation—we are given certain most useful classifications, as, for instance, of end-organs according to Sir Charles Sherrington's terminology.

Almost all the figures, as should be the case in a manual of histology, are exceedingly clear. Only one (on page 617) teaches nothing. Some of the illustrations are of sections not found in every textbook, such as the lacrymal glands, the ceruminous glands, the glands of Bartholin, the vagina, the gall bladder, the regenerating hair, the external auditory meatus, and the pericardium.

The liver is dealt with very successfully; we do not remember to have seen such illuminating diagrams as those given here; the same is true of the treatment of neuroglia. The valuable new mounting medium, euparal, is described; sections can pass direct from 95 per cent. alcohol into it. This saves time and money, and is less trying to the undergraduate patience than the full dehydration and clarification processes for Canada balsam; further, euparal displays cytological details better than balsam. We miss a vertical section of the placenta to show the relations of the chorion to the maternal sinuses. A transverse section of the chorionic villi is given (Fig. 470); but unless the student sees also a vertical section of the placenta he will get no correct picture of this difficult organ. The manner in which the histology of the thrombocytes is dealt with is inadequate. In describing the Berlin blue injection mass, it would have been well to point out that its colour is apt to fade in the smaller vessels owing to the still living tissues acting on the pigment like a reducing agent in an alkaline medium; hence there must be a trace of acid in the mass. The omission of the names of Banting and Macleod from the allusion to insulin is quite inexplicable. The expression "heart of beef" (p. 102) is incorrect when ox or cow is meant, as "beef" means only the flesh of these animals prepared for the table.

NOTES ON BOOKS.

THE new volume of *The Westminster Hospital Reports*[9] is edited by Mr. ROCK CARLING and Dr. HILDRED CARLILL. The last volume of the series was issued ten years ago; publication has been resumed at a propitious moment, for it coincides with the reopening of the hospital after extensive alterations and improvements. Nearly half the volume is given to Mr. W. G. Spencer's interesting history of the hospital, which was noticed in a paragraph published in our columns on December 6th last (p. 1066). The hospital was founded in 1721 and was removed to the building on the present site in 1834. The concluding pages of the volume are given to the reports of the medical and surgical registrars and to short notes by Dr. J. A. Braxton Hicks (pathologist) on the work of that department during the years 1913–22, and an analysis of cases treated in the department for venereal disease since the beginning of the Ministry of Health scheme in 1917. For the intervening pages an ambitious scheme had been framed; the editors hoped to secure the co-operation of all the members of the staff in a systematic study of the *post-mortem* records of ten years. Their hopes were not fully realized, although six contributions of this nature were made. These contributions deal with diseases of the mouth and tongue, gastric and duodenal ulcer, lung complications after surgical anaesthesia, with cases coming under the jurisdiction of H.M. coroner, etc., with toxaemias of pregnancy, and with pulmonary embolism, the last being by one of the editors, Mr. Rock Carling; the other editor, Dr. Hildred Carlill, contributes a paper on tabes dorsalis, which includes a note on treatment.

International Clinics[10] is a quarterly volume of clinical lectures and original articles on different branches of medicine written by "leading members of the medical profession throughout the world." Of the twenty-six contributors to Volume IV, twenty-four are from the New World; the Old is only represented by one writer from Scotland and one from France. The contents are divided into six sections, dealing successively with the diagnosis and treatment of certain diseases, such as pellagra and Vincent's angina; the diagnosis and treatment of less clearly defined maladies, such as eczema and intestinal obstruction; general medicine; pediatrics; surgery; and industrial medicine. Certain of these articles, such as that by Dr. F. G. Banting on insulin, have already been read before some scientific society. We may call attention in particular to the lavishly illustrated article by Dr. Eliason and Dr. Hinton on internal fixation in fractures.

The new (third) volume of *The Lives of the Rakes*[11] is concerned chiefly with Colonel Charteris (1660–1732). Mr. BERESFORD CHANCELLOR says that no regular attempt has hitherto been made to write his life, and he was such an utter blackguard that it is just a question whether it was worth doing at all, or, if it was to be done, whether it ought not to have been included in a series of lives of notorious criminals; he was a bully, a swindler, a card-sharper, was twice cashiered from the army, and twice sentenced to death for rape. The second time he spent £15,000 (equal to £60,000 to-day) in fees and bribes, and was only reprieved because George II, in the then state of political opinion in Scotland, was afraid to allow a man connected with several influential families in that country to hang. The man leering on the doorstep of the inn in the first plate of Hogarth's Harlot's Progress is a portrait of Charteris. It is bad luck for Philip Duke of Wharton (1698–1731) to be bound up with such a scoundrel. Wharton was freed too young from the discipline, injudicious though it was, of his distinguished father, and went off forthwith to commit every sort of folly; he had dissipated a large fortune before he was five and twenty, and died, killed by wine and women, at the age of thirty-three. But he was mad, or scatter-brained, rather than bad; he was a boy prodigy in classics, he was an effective public speaker, wrote a good English style, and made for himself friends among the greatest writers of the age. Just when he seemed to be settling down and his wife had given him a son and heir, she, contrary to his express instructions, took the boy to London, where an epidemic of small-pox prevailed; the infant contracted the disease and died. Wharton left his wife, abandoned general politics, intrigued with the Jacobites, and eventually went abroad and became an open rebel.

A Clinical Index of Radium Therapy, to which we referred at some length on April 4th (p. 670), has now been issued by the committee of the Radium Institute, London, in a bound volume, copies of which can, we understand, be obtained post free by members of the medical profession on application to the secretary, Mr. Thomas A. Garner, F.C.I.S., Radium Institute, 16, Riding House Street, London, W.1.

[8] *A Text-book of Histology.* By H. E. Jordan, A.M., Ph.D. London and New York: D. Appleton and Co. 1924. (Med. 8vo, pp. xxviii + 857; 594 figures, 4 plates. 25s. net.)

[9] *The Westminster Hospital Reports.* Vol. 19. Edited by E. Rock Carling and Hildred Carlill. London: Henry J. Glaisher. 1924. (Med. 8vo, pp. xvi + 299; illustrated. 7s. 6d. net.)

[10] *International Clinics.* Vol IV. Edited by Henry W. Cattell, A.M., M.D.Philadelphia. Thirty-fourth series, 1924. London: J. B. Lippincott Company. 1924. (Med. 8vo, pp. xi + 308; illustrated. 42s. net per four volumes, issued quarterly.)

[11] *The Lives of the Rakes.* Vol. III. *Charteris and Wharton.* By E. Beresford Chancellor. London: P. Allan and Co. 1925. (Med. 8vo, pp. viii + 243; 8 plates. 10s. 6d. net.)

PREPARATIONS AND APPLIANCES.

An Alkaline Mineral Water.

BILINA is the name of a natural mineral water obtained at a spring in Czecho-Slovakia, not very far from Carlsbad. The analysis submitted shows that this water very closely resembles that of the well known Source de l'Hôpital at Vichy. It contains slightly less sodium bicarbonate, but has a small quantity of lithium bicarbonate. It has also rather more sparkle (2.3 of free carbonic acid in place of 1.0). The water is supplied in bottles in this country by the International Development Company, 4, Trafalgar Square, London, W.C.2. The water is palatable, and, as was to expected, very closely resembles the Vichy water mentioned in taste. It is stated that great care is taken to ensure that the water is bottled at the springs at Bilina under the best hygienic conditions.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

EVIDENCE OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

AT the meeting on May 4th of the Royal Commission on Lunacy and Mental Disorder, with Mr. H. P. MACMILLAN, K.C., in the chair, evidence was tendered on behalf of the Medico-Psychological Association of Great Britain and Ireland by Dr. R. H. Cole, Dr. M. A. Collins, Dr. Edwin Goodall, Dr. J. R. Lord, Sir Frederick Mott, and Dr. R. Worth. The printed Memorandum of Evidence submitted by the Association, together with three appendices, has since been published.[1]

Dr. COLE said that it was the view of his association that the safeguards provided by the existing Lunacy Acts against abuses and illegal detention had, on the whole, proved satisfactory, but the Acts had failed to keep pace with medical progress, especially in regard to the treatment of the initial and more curable stage of mental disorders. It was desirable that clinics for mental disorders, preferably in connexion with universities, medical schools, and general hospitals, should be established. Voluntary patients should be received in such clinics, and provision should also be made in them for the reception of non-volitional patients for a limited time without certification. These clinics should be provided and maintained by local authorities, the supervisory committee should be the subcommittee of a local statutory body, and the inspection and approval of buildings used for such clinics should be the duty of the central department. The Medico-Psychological Association also urged that mental hospitals should be encouraged to admit voluntary patients, who should be required to give seventy-two hours' notice of their desire to leave the institution. Further provision should be made for paying patients in homes where they could be received in the early stages of their disease without certification.

The association suggested that all matters of mental health should be centralized in the Board of Control, which should be designated the Board of Mental Health. The number of medical members on the Board should be increased, they should be better paid, and in making appointments of medical commissioners experience in general medicine and status in the profession should be taken into account. The management of all rate-supported institutions should be vested in one statutory committee of mental health of a local authority. Certain changes in the legal formalities were suggested. The certification of rate-aided patients should follow the same procedure—namely, the two certificates—as that of private patients. It was desirable that patients of either class should be admitted to mental hospitals under a provisional order, to take the place of the present urgency procedure for unwilling patients. This provisional order might be used, not only on the ground of urgency, but so as to provide means of temporary observation and treatment under safe conditions. It should be accompanied by a medical certificate specifying facts and reasons, and should hold good for three days, the period to be extended by twenty-eight days in suitable cases. It was undesirable that patients alleged to be of unsound mind should be removed to a workhouse before reception at a mental hospital. If an intermediate stage was necessary after the provision of clinics for incipient cases it would be better supplied by a special clinic under the management of the local authority. The association also laid it down that the protection afforded by Section 330 of the Lunacy Act, 1890, to medical practitioners should be extended to stay proceedings at an earlier stage than at present, and that practitioners should receive the same immunity as was given to witnesses in a court of law. The association also had certain amendments to suggest to the Mental Treatment Bill, 1923, should it be reintroduced.

The witnesses were examined at length on their suggestions with regard to early treatment.

Dr. EDWIN GOODALL said that the association had been pressing for some years for a relaxation of lunacy law to permit of the more effective treatment of mental disorder in its early stages. The establishment of clinics assumed the existence of a general hospital, and to meet the need in areas remote from such a hospital it would be necessary to have a comprehensive scheme of hospital linkage such as was described by Lord Dawson in the interim report of the Consultative Council on Medical and Allied Services. The psychiatric clinic should be under the same administration as that of the general hospital, but in a building not contiguous. He favoured the plan in being at Munich and elsewhere in which the psychiatric unit was installed in a separate pavilion in its own grounds. It was not wise to have mental cases in the general wards.

The CHAIRMAN remarked that this would rule out many of the large hospitals of London, which could make no such provision of a separated building. Dr. GOODALL replied that London was a problem in itself, but in the great cities of Germany, even in Berlin, at the Charlottenburg Clinic, it had been found possible to set apart a special building enclosed in its own grounds. Asked what would be the relation between the clinic and the existing asylum system, he said that there would be no relation at all, except in so far as incurable or violent cases were concerned. In his view, all early cases, whatever their nature, should be admissible to the clinic, where they would receive more intensive treatment than was usual at an asylum. A clinic would employ a much larger medical and nursing personnel in proportion to patients, and the staff would be assisted by a number of other medical men who were there for tuition and research. In this connexion he recited the extraordinarily large staff roll of the Boston Psychopathic Hospital, which had only 110 beds, but employed a large number of medical officers and laboratory workers in many different departments.

The CHAIRMAN said he had been impressed by the completeness of the staff at Boston, but it was hardly to be expected that many institutions, in this country at all events, could enjoy the same adequacy. He asked whether it would be a true description of the clinics that they were clearing-houses. Dr. GOODALL, in his reply, expressed strong objection to this title. The clinics would be institutions for the treatment and cure of patients, not corridors to the asylum. Patients would go there for six months, and if at the end of that time they were not cured their stay should be renewable for a further period.

Sir HUMPHRY ROLLESTON asked whether it was not better to send a maniacal patient to a secluded portion of a mental hospital rather than to a clinic, where his presence might have a detrimental effect on other patients. Dr. GOODALL answered that he knew this was often urged, but Professor Winckler, whose neuropsychiatric clinic at Utrecht was probably the best in existence, had assured him that there was nothing in it. He was unable to see why such a patient should not be taken into the clinic; by appropriate treatment he could be very quickly and effectively calmed down.

A long discussion ensued on the subject of "voluntary" patients.

The CHAIRMAN said that as a lawyer he had often felt considerable perplexity as to whether a person suffering from mental disorder could be said to have any volition at all. He felt that many of the cases spoken of as voluntary were not really voluntary having regard to the disturbance of will power and intelligence connoted by mental disorder. Dr. GOODALL suggested that this was one of the matters in which the medical profession might be trusted. The CHAIRMAN remarked that while that was true, he was not fond of colourable phrases, and a "voluntary mental patient" always seemed to him a contradiction in terms. Dr. GOODALL said that many of the patients had full volition, and others were "betwixt and between." The CHAIRMAN remarked that it might be a lawyer's prejudice, but it did not commend itself to his mind to give any particular value to the assent of a person who was mentally in a pathological condition. No one would propose to make valid a contract by a man in that state of mind signing away his property, and yet here it was proposed to rely upon the signature of such a man to a document which deprived him of his liberty. The voluntary system might easily become a camouflage.

Dr. MENZIES pointed out that there was one class of persons who were liable to be forgotten in connexion with these clinics—namely, persons already certified in mental hospitals who developed physical illness and required surgical or other treatment which a general hospital could afford. It was desirable that such persons should be transferred to the clinic at the general hospital for a short period without any breaking of their committal order.

The next point taken was the association's recommendation that the reception into mental hospitals should follow the same procedure in the case of private and of rate-aided patients.

Dr. COLE said that doubtless a second certificate in the one case as in the other would be an additional safeguard. Dr. COLLINS gave some figures to show that under the Act at present the great majority of persons came in under one certificate. Of the admissions to the Kent County Hospital in 1924, the number who came in under one certificate as paupers in receipt of relief was 196; 7 were admitted as lunatics wandering at large; and 29 were admitted under two certificates as persons not under proper care and control.

The witnesses were next examined on their recommendation (already explained) for admission to mental hospitals under a "provisional order."

The CHAIRMAN suggested that such an order would attract to itself just the same stigma as certification. It was residence in the institution, not the procedure of admission, which constituted the stigma. Dr. MENZIES affirmed his belief that if a considerable proportion of admissions to mental hospitals were on a voluntary basis the distinction between a mental hospital and a general hospital would gradually pass away. Dr. LORD expressed the view that at his own asylum, if permission were given to take in voluntary patients, 50 per cent. of the inmates would be voluntary boarders within five years, and the stigma of detention would be correspondingly diminished. The CHAIRMAN was of opinion that no amount of renaming would obliterate the fact, which constituted the real stigma in the popular mind, that in a person's life there had been a "pathological episode" during which he had ceased to be to some extent a normal, rational human being. Everyone would agree that the mental hospital should be assimilated as far as possible to the general hospital as a place of hopefulness and cure. On the point that a psychiatric department in a general hospital might attract to itself something of the same stigma, one of the Commissioners mentioned that the mental ward in one institution he was aware of was known as the "balmy ward."

The examination of the witnesses had not concluded when the Commission rose for the day.

[1] London: Adlard and Son and West Newman, Ltd.

Nova et Vetera.

A POET'S ANATOMY.

THE metrical form has not often been used as a means of conveying exact knowledge, and anatomists and physiologists have doubtless shown a wise discretion in avoiding it. Yet it was chosen nearly three hundred years ago by the Rev. Phineas Fletcher for that purpose.

Phineas Fletcher was born in 1582, the son of a Kentish clergyman; he was educated at Eton and at King's College, Cambridge, of which he was a Scholar and a Fellow. During his residence at the university he wrote a pastoral play, *Sicelides, A Piscatory*, which was published in London in 1631, "As it hath beene Acted in King's Colledge in Cambridge." Two years later *The Purple Island* appeared, "Printed by the Printers to the Universitie of Cambridge 1633." His other poetical works and those of his younger brother Giles call for no mention here. Sir Henry Willoughby, in whose house in Derbyshire he was for five years chaplain, presented him to the living of Hilgay in Norfolk, where he married and spent the rest of his life, and where this poem was written.

Phineas must not be confused with his greater contemporary John Fletcher, the dramatist and associate of Beaumont, who was also the son of a country clergyman, a Cantab., and a native of Rye, only a few miles distant from the birthplace of Phineas at Cranbrook. It is not likely that Phineas had any practical knowledge of anatomy, but he probably had read Vesalius or one of his translators. He showed no knowledge of the recent discoveries of his countryman Harvey, although Harvey's lectures were delivered early in 1616 and the treatise *De Motu Cordis et Sanguinis* was published in 1628.

The Purple Island, or Isle of Man, is a pastoral poem in twelve cantos of seven-lined rhyming stanzas, in which not only is man's body and its functions described in an allegorical fashion, but the Creation and the Fall and the strife between sin and virtue and other high matters are set forth. It will readily be admitted that for so vast a subject 4,879 lines are none too many. It has been suggested that in treating the anatomy of the human body in this allegorical fashion Fletcher was merely elaborating the twelfth chapter of Ecclesiastes, but it is not certain that that chapter is wholly anatomical in its conceptions. The allegorical descriptions in the text are accompanied by copious marginal notes which purport to translate the allegorical statements of the poem into plain English.

The first canto consists of an account of the Creation and Fall of man, but in the second we come down to more prosaic matters. After stating that the bones, cartilages, and ligaments are formed respectively of different constituents of the seed, he comes to the vascular and nervous systems and then to the skin, the following description of which amply exemplifies the value of marginal notes:

> "The first of these is that round spreading fence,
> Which like a sea girts th'Isle in every part;
> Of fairest building, quick and nimble sense,
> Of common matter fram'd with speciall art;
> Of middle temper, outwardest of all,
> To warn of every chance that may befall:
> The same a fence, and spie; a watchman and a wall."

And so on. The note to this stanza runs as follows:

> "The skinne is a membrane of all the rest of the most large, and thick, formed of the mixture of seed and bloud; the covering, and ornament of parts that are under it: the temper moderate, the proper organ of outward touching (say Physicians)."

After describing the fat and the walls of the abdomen he comes to the "Urine-Lake," as he calls the bladder, and to the parts of generation, which his modesty will not allow him to particularize:

> "From thence with blinder passage (flying name)
> These noysome streams a secret pipe conveys;
> Which though we tearm the hidden parts of shame,
> Yet for the skille deserve no lesser praise."

Elsewhere he writes:

> "Flie then those parts, which best are undescried,
> Forbear my maiden song, to blazon wide
> What th'Isle and Nature's self doth ever strive to hide."

If, as seems most probable, Phineas was the author of the anonymous but lascivious poem, "Brittain's Ida," we can understand his reluctance to acknowledge its authorship. His opinions of pregnancy and lactation are quaint. Thus in verse he sings:

> "For when the lesser Island (still increasing)
> In Venus temple to some greatness swells,
> Now larger rooms and bigger spaces seizing,
> It stops the Hepar rivers; backward reels
> The stream and to these hills bears up her flight,
> And in these founts (by some strange hidden might)
> Dies his fair rosie waves into a lily white."

After this the marginal prose comes with a sense of bathos thus:

> "When the infant grows big he so oppresseth the vessels of bloud, that partly through the readinesse of the passage, but especially by the providence of God, the bloud turns back to the breast and there by an innate but wonderfull facultie is turned into milk."

Of the Diazome or Diaphragma we are told in a note:

> "Here most men have placed the seat of laughter: It hath much sympathie with the brain; so that if the midriffe be inflamed, present madness ensues it."

As is well known, the early anatomists were much impressed by the size of the liver, and, knowing practically nothing of its functions, they did not hesitate to invent a great deal.

> "In this fair town, the Isles great steward dwells;
> His porphyrie house glitters in purple die;
> In purple clad himself; from hence he deals
> His store to all the Isles necessitie.
> * * * * *
> The joviall hepar sits, with great expence
> Cheering the Isle by his sweet influence,
> So slakes their envious rage and endlesse difference."

The sufferer from long residence in the tropics will hardly recognize his tyrant in this guise.

> "Within some say Love hath his habitation;
> Not Cupid's self, but Cupid's better brother:
> For Cupid's self dwells with a lower nation,
> But this more sure, much chaster than the other;
> By whose command we either love our kinde,
> Or with most perfect love affect the minde;
> With such a diamond knot he often souls can binde."

A marginal note reminds us that "here Plato disposed his seat of love." But, unfortunately, although the liver is beneficent its excrements are not:

> "Three pois'nous liquors from this purple well
> Rise with the native streams."

One is red, one black, and the third "wheyish cold." The fiery red fluid is "the spring of dire debate and civil ire," but Choledochus or the Gall takes charge of it, "And safely locks it up in prison bands"; while "The third bad water bubbling from the fountain" goes to the Nephros mountain or kidneys, "Which suck the best for growth, and nourishment," and the worst "Runs down to the Urine-Lake, his banks thrice daily filling."

The idea expressed in the last line of the periodical excretion of urine is curious and not easily explained, except as an example of the popular liking for the number three.

If it were not for the spleen, which deals with the black fluid, we should all be in a very bad way, for as the notes explain:

> "If the splene should fail in this office the whole body would be filled with melancholy fancies and vain terrours.
> "Where the splene flourishes all the body decayes, and withers; where the splene is kept down, the body flourishes. Hence Stratonicus merrily said that in Crete dead men walked because they were so splenitive and pale-coloured."

This is rather contradictory and puzzling, and it would seem that our reverend anatomist had not quite grasped the current pathology, but the reference to Stratonicus suggests the enlarged spleen of malaria.

The stanzas on the brain and the organs of special sense merely represent the usual seventeenth century physiology, whose teachers had not yet learnt to admit how little they did know and often hid their ignorance behind a closely woven veil of speculation.

We cannot recommend *The Purple Island* as a textbook of anatomy, but Phineas Fletcher is still worth reading for his melodious verse, wealth of language, and picturesque imagery.

British Medical Journal.

SATURDAY, MAY 9TH, 1925.

PUERPERAL SEPSIS.

WE offer our congratulations to the members and executive of the British Congress of Obstetrics and Gynaecology on the success, both scientific and social, which has attended their meetings recently held in London, an account of the proceedings at which has appeared in our last two issues. The pooling of the professional experiences of those intimately concerned in the advance of obstetrics and in the teaching of this important branch of medicine cannot fail to have results of value, not only for the profession but for the community. In particular the discussion of the topical subject of puerperal sepsis, to which the Congress devoted its opening day, must compel the grave attention of the Ministry of Health, the Central Midwives Board, and generally of the members of the medical profession engaged in midwifery. Evidence is forthcoming, moreover, that public opinion is becoming anxiously concerned, and a note of real responsibility marked its consideration by the Congress.

Sir George Newman, in a prefatory note to Dame Janet Campbell's very able report on maternal mortality, issued by the Ministry last year, says: "The problem with which we are faced is this. There are not less than, say, 700,000 mothers in England and Wales giving birth to children per annum. Of this number approximately 3,000 per annum have died during the last ten years in the fulfilment of this maternal function. That is a serious and largely an avoidable loss of life at the time of its highest capacity and in its most fruitful effort. Yet the number of deaths by no means indicates the whole loss, for a vastly greater number than 3,000 of these mothers are permanently injured or invalided in this physiological process of childbirth." In this total maternal mortality and morbidity, thus so forcefully and justifiably deprecated, the "sepsis" factor is dominant, and, by common consent, is the most amenable to solution by way of prevention; the question naturally arises why a factor admittedly largely preventable has continued to hold so outstanding a position.

The two reports-in-chief, summaries of which were published in our issue of April 25th, were presented by the President, Dr. H. Russell Andrews, and by Dr. Daniel Dougal, both of whom had expended much time in ably analysing the material submitted to their respective committees. The President's report dealt with returns submitted through the constituent societies of the Congress other than the North of England Obstetrical and Gynaecological Society, and Dr. Dougal's with information garnered by that society. The basis material in both reports, as would be expected from their declared objective, which was the prognosis and treatment of puerperal sepsis, was mainly clinical, and incidentally bacteriological or pathological. Sir Ewen Maclean's paper on puerperal sepsis in Wales dealt with an interesting aspect of the problem as it meets the local authorities, the general practitioners in rural and urbanized areas, and the midwives, and further illustrated the important position taken by the Principality in the sepsis and general maternal mortality tables. Valuable contributions to the essentially bacteriological considerations, both in evident sepsis and in pregnancy presumably normal, were contained in the joint communications of Dr. Gibbon FitzGibbon and Professor J. W. Bigger. Dr. T. H. C. Stevenson of the General Register Office emphasized by means of graphs the fact that puerperal sepsis mortality has a winter maximum in the fourth and first quarters of the year, and that this applied also to some of the "other causes" of maternal mortality in which a "sepsis" element may be assumed to exist—as, for instance, phlegmasia alba dolens. Dr. Stevenson and other speakers in the course of the discussion referred to the difficulty of making international comparisons, and the view was expressed that the need of so amending the International List of Causes of Death as to meet this point ought to be represented in the proper quarter.

The general discussion was opened by Professor J. Whitridge Williams of Baltimore, who, together with Professor W. W. Chipman of Montreal, was cordially welcomed as one of the official guests of the Congress. Dr. Whitridge Williams observed that whilst there was much obviously common ground in the two reports, the disparities were due mainly to the more serious type of cases selected for analysis by the North of England Committee. A mortality of 35.8 per cent. in 247 cases was shown in the London report, as against 76 per cent. in 154 cases in that of the North of England Society. He laid stress on the points demonstrated by both reports, points which he said he had for years been teaching in America: first, that women subjected to much manipulation were more likely to develop infection than those who were left alone; and secondly, that in infected cases intra-uterine manipulation was especially dangerous; both reports gave such cases a mortality of something like 80 per cent. He considered that the value of anti-streptococcic serum was in the balance, and he was frankly pessimistic as to the effect of treatment in severe cases of infection, particularly if associated with general streptococcic peritonitis, when death was practically inevitable. This view was combated to a certain extent by Professor Blair Bell, who claimed that some of the cases complicated by peritonitis could be saved by drainage of the peritoneal cavity. Dr. Whitridge Williams, indeed, agreed that in severe cases with pyaemia operative treatment might reduce the mortality from about 70 per cent. to 50 per cent., but maintained that cases which did not show these acute general conditions might recover if left alone, prognosis depending on the resistance of the patient and the virulence of the organisms. What was wanted, he urged, was research, not purely obstetrical, but proceeding on general lines of bacterial investigation. In commenting on the observations of Drs. FitzGibbon and Bigger, which appeared to indicate that, roughly, streptococci (fortunately not of the haemolytic type) were found in the vagina of the pregnant woman in two cases out of three, he said that the technique was, perhaps, not above suspicion, and deprecated the use of the term "endogenous infection" except in regard to the gonococcus and possibly certain saprophytic organisms. Dr. Whitridge Williams is clearly a whole-hearted supporter of the view that, with the exceptions mentioned, it is proper to regard the source of puerperal infection as exogenous. But this opinion was not shared by other speakers, and Mr. Victor Bonney restated his belief that puerperal sepsis was principally autogenetic, and

that it was making too much of the bacteriological evidence to believe that only haemolytic streptococci could give rise to sepsis.

The claim that non-haemolytic streptococci may be included in the normal vaginal or post-partum uterine flora, though not quite new, requires confirmation, and the hint of the possible existence of certain undefined conditions which may confer pathogenicity on this type of streptococcus also supports the call for further organized research. Subsequent speakers, notably Dr. C. E. Douglas (Cupar, Fife) and Lady Barrett, urged that such further research should have fuller regard to the factors which constitute and the conditions which may vary the power of resistance to infection, and this view is undoubtedly shared by many. As to treatment, reference to our reports of the discussion shows some methods recommended, but the two reports-in-chief practically agree that the various treatments mentioned in the returns represent such a medley of ways and means as to defy analysis.

The educational, the propaganda, and the administrative aspects of the subject were not forgotten, and, whenever tested, the feeling of the Congress supported those who advocated the fuller practical training in obstetrics of the medical student; the more complete and better organized provision of well trained and suitably educated midwives; the ante-natal supervision of mothers, both domiciliary and, where necessary, in clinics, as advocated by the British Medical Association in the evidence before the Royal Commission on the Insurance Acts; and a substantial addition to the existing provision of maternity homes and of maternity wards in or in connexion with the general hospitals. In regard to this last-named requirement the Congress unanimously adopted for submission to the Ministry of Health a resolution to the effect that "the most urgent requirement in connexion with the problem of puerperal sepsis is the provision of adequate accommodation for the reception and treatment of these cases in hospitals, supervised wherever possible by obstetric surgeons."

It remains to add that perhaps never before has such a degree of influential attention been focused on this principal item in the maternal mortality rate of our country. The Ministry of Health is gravely concerned, and is asking for advice and guidance in the matters of definition and notification from the Obstetrical and Gynaecological Section of the Royal Society of Medicine. The reply of the Section has been submitted to the Council of the British Medical Association, which has set up a special committee on the causation of puerperal morbidity and mortality; the reply has been referred to this committee, which will report also on the administrative action that may properly be taken in the matter through the vast machinery of the Association. It is understood that the Central Midwives Board contemplates an inquiry through the agency of the local authorities, and the Society of Medical Officers of Health and the midwives' organizations are also keenly interested.

There is already evident some danger of overlapping and dissipation of energy, and it would seem appropriate to suggest that the Minister of Health might consider the advisability of summoning a conference of representatives of the bodies and interests principally concerned, in order that the genuine interest aroused may be turned to the best account and the various parts of the whole subject allocated to persons or bodies to the best advantage, and that thus the prospect of this great problem being handled in a fashion befitting its truly national importance may be enhanced.

CLINICAL FEATURES AND PREVENTION OF FOOD POISONING.

THE record of one hundred recent outbreaks of food poisoning in this country, which form the basis of the report of the Medical Research Council analysed elsewhere in this issue (p. 897), has two lessons to teach which deserve a special emphasis; they are included in the sections which deal with the clinical features and the prevention of food poisoning. The opinions Dr. W. G. Savage and Mr. Bruce White express on these two subjects, whether accepted in their entirety or not, are likely to conduce to the formation of a clearer idea of the clinical features of food poisoning, and to point the way to the safeguarding of food from infection.

Excluding botulism—a very deadly, and fortunately extremely rare, form of food poisoning—we find a remarkable uniformity of symptoms in all the other outbreaks reported in this country. The cardinal symptoms of the salmonella type of food poisoning are diarrhoea, vomiting, and abdominal pain. The significance of these symptoms will be appreciated if the different agencies which may be at work in this variety, much the commonest, of bacterial poisoning have been dissected out. Thus, food may be infected with living salmonella bacilli, this constituting the most serious factor. Or, as in canned food, the living germs may have been destroyed, but the toxin they formed, being more resistant to heat than the living cells, may survive in the food; this is the second and less serious element to be considered. Finally, the experimental work which Dr. Savage and Mr. White described in their earlier report on food poisoning and the salmonella group[1] defined the existence of a potent gastro-intestinal irritant in food so infected, and this, acting alone, accounts for the mildest type of illness.

Taking these three possibilities in the reverse order, we note that in some outbreaks of food poisoning the only symptoms are those of transient gastro-intestinal irritation, without any evidence of absorption of toxic substances. These outbreaks are characterized by a short incubation period, rapid recovery, and no troublesome sequelae. In this variety the only factor to be reckoned with is the irritant action on the alimentary tract, and probably the majority of such cases do not come to medical notice, and do not figure in their true proportion in any statistics of food poisoning. More serious symptoms result when this irritant action is followed by the absorption of the specific toxins the salmonella have formed during their growth. The main effect of these toxins is severe gastro-enteritis associated with constitutional disturbance such as fever, prostration, and cramping pains. These pass off quickly as the toxic substance is eliminated, and after twenty-four hours all anxiety has usually passed. This form of food poisoning is rarely fatal. The features which distinguish it are the rapid onset of severe symptoms, manifesting themselves in two to four hours after eating the food, and the equally rapid return to health. Statistics show that canned food is the commonest vehicle for this type of infection, a fact which is easily understood when the power of heat resistance possessed by salmonella toxin is remembered. Food poisoning in its most dangerous form follows when living salmonella bacilli are taken with the food. As toxins may also be present the incubation period may be as short as before, but the initial symptoms are followed by a severe illness which runs a protracted course. Here the patient suffers from a general bacterial infection, and we may expect several days of fever and a slow convalescence.

[1] Medical Research Council, Special Report No. 91.

Fortunately, the mortality from food poisoning in this country is low, probably only about 1.2 to 1.3 per cent. even when infection with living salmonella bacilli has occurred; in outbreaks due to salmonella toxins alone the mortality is about 0.54 per cent. Food poisoning of this type leads to a fatal issue usually only in patients suffering from some debilitating disease, or those already afflicted with an intestinal lesion, or patients at the extremes of life.

The ultimate goal of hygiene is the complete prevention of food poisoning. We can only advance to this step by step, but the researches of recent years have defined a number of limited objectives well within reach. It must be recognized that food poisoning is not the result of the normal decomposition of food, but of the infection of food with a special class of bacteria, the salmonellas. Not all of these need special guard, for only a few are of any pathological significance. Thus the essence of the problem is how to control these specially dangerous germs, and to exclude them from food supplies. To solve this question the authors of this report make three suggestions which deserve careful thought.

The first step in the control of bacteria responsible for food poisoning is more accurate knowledge of their habitat. Of this little is known, and it is unfortunate that usually outbreaks of food poisoning are inadequately studied. Thus, only a few outbreaks come under any official cognizance; even in Dr. Savage's list several only came to be investigated through the following up of paragraphs in newspapers, and were usually unknown to the official guardians of the public health, central or local. Some system of notification might, it is thought, be helpful by enabling medical officers of health to investigate outbreaks earlier and more thoroughly. Some local authorities have a skilled staff to undertake bacteriological and chemical inquiries, but others have not. All outbreaks which epidemiological inquiries suggest to be food poisoning ought to be investigated, and the investigation should include the study of *post-mortem* material. An inquest is usually held in a fatal case, and sometimes a *post-mortem* examination is made, but to obtain the best results the services of a pathologist familiar with food poisoning should be available.

The second step in control which Dr. Savage suggests is better supervision of "made-up" foods, such as meat pies, brawn, potted meat, and sausages. They are considered to be an important class as a source of food poisoning outbreaks. The meat from which they are made undergoes considerable manipulation, and is therefore specially liable to bacterial contamination. They are mostly foods which are heated and then cooled slowly, offering an encouraging medium to bacterial growth. Their preparation is not infrequently undertaken in slaughterhouses or adjacent premises where opportunities for specific infection are plentiful. Supervision could be exercised by requiring that every person carrying on such a business should be licensed to do so by the local authority, which should satisfy itself that the premises are suitable, the procedures likely to be conducted in a cleanly fashion, and all precautions taken to prevent specific bacterial contamination.

A third step in control should be directed to diminish outbreaks of food poisoning from canned food, which is a frequent vehicle for the transmission of food poisoning, particularly that variety due to toxins of the salmonella bacilli. Since infection of the food must arise before the food is put into tins, or before these are sealed, attention must be focused on the place of manufacture. Some properly developed system of coding, with disclosure of the code marks to a central authority in the country of import, would materially facilitate investigation of any particular consignment.

These measures would do a great deal, but, as the report observes, "any effective control is only likely to be attained when our knowledge of the parasitic and saprophytic life of the salmonella group has been put upon a basis of exactly ascertained fact."

INOPERABLE CARCINOMA OF THE CERVIX.

In a leading article in our issue of March 28th, 1925, reference was made to two American reports dealing with the incidence of carcinoma of the cervix uteri, and its response to radium therapy alone, or combined with *x*-ray treatment. In each report the conclusion was reached that the combination of radium and *x* rays in the treatment of this form of cancer is likely to gain favour, especially in borderline and inoperable cases; in the inoperable cases better results were obtained by radium therapy than by any other non-operative palliative procedure, or by cautery. In his *Clinical Index of Radium Therapy*, published by the London Radium Institute, and reviewed in our issue of April 4th (p. 670), Mr. Hayward Pinch dwells on the need for forming a clear opinion as to the operability or otherwise of the growth in cervical cancer, and for relying principally in inoperable cases upon radiation, supplemented by local operations, such as excision, scraping, or diathermy, of fungating portions of the growth. In our present issue will be found a paper by Dr. Malcolm Donaldson upon the treatment of inoperable carcinoma of the cervix with radium, based in the main on his experience of 85 cases treated at St. Bartholomew's Hospital during the past four years, but taking into account also the methods and results of other workers in various centres abroad. We publish also a paper by Dr. Gilbert Strachan upon the same subject, founded on a study of 40 cases treated with radium at the Cardiff Royal Infirmary during the past three years; both papers were communicated to the fifth British Congress of Obstetrics and Gynaecology held in London a fortnight ago. In the discussion that followed Dr. Watts Eden made the significant remark that it almost seemed as though surgery had said its last word about carcinoma of the cervix; the extended operation had been carried to a point from which, he imagined, no further advance was possible; it would be necessary to look to radium alone in cases in which an operation could not be done. Again, two French workers, whose recent paper is summarized in the *Epitome* this week (paragraph 478), while sceptical about radium as a routine mode of treating cervical carcinoma, and satisfied that at present all operable cases should be treated surgically, are emphatic in declaring that, when the limits of the neoplasm cannot easily be passed in surgical extirpation, radium is preferable to all other modes of treatment. From all this, we think, the inference may legitimately be drawn that the treatment of inoperable carcinoma of the cervix uteri has now become a special branch of the cancer problem, calling for intensive inquiry along collective lines, and that the most hopeful method of treatment in such cases is either by radium or by *x* rays. Serious work in this direction has, however, been carried out during so short a space of time that the most suitable technique has yet to be determined. Two needs in particular suggest themselves: uniformity in the recording of observations, and employment of the same technique by each worker in a series of cases. With a view to meeting these two primary needs an informal association has been formed in this country by a number of workers in this field, in order that suggestions, methods, and published papers bearing on the subject may be circulated to all concerned. The object, as we understand it, is not to hold

committee meetings, but to ascertain through correspondence and exchange of visits the particular lines followed by surgeons at different centres in Great Britain and Ireland, and to persuade individual workers to carry out, as far as possible, some one technique through a series of at least fifty cases. Tedious clerical work would be obviated by the use of standard forms requiring simple answers (such as yes or no), and by the carrying out of statistical analyses at headquarters, the original records being returned to the sender. By this simplification of returns, and centralization of analysis, it is hoped that busy individual workers may be drawn into the fold. Those interested in the matter are asked to communicate with the honorary secretary, Inoperable Carcinoma of the Cervix Association, c/o the British Empire Cancer Campaign, 19, Berkeley Street, W.1.

THE SLOW MARCH OF HYGIENIC EDUCATION.

SIR GEORGE NEWMAN, in presiding at the Society of Arts on April 29th, when Dr. Andrew Balfour read a paper on "The trend of modern hygiene," confessed that he found something gravely dissatisfying in the outlook so far as education in hygiene was concerned. Someone from abroad had remarked to him, "This is the land of Jenner, and yet you have an unvaccinated people." The teaching of Jenner had gone out into all the world, and yet during the previous week 168 fresh cases of small-pox had been notified—mild small-pox, happily, but entirely unnecessary and preventable. The fundamental truth that lay behind vaccination, however cumbersome the procedure of vaccination might be, had not been grasped by large masses of the people. Only the other day, again, there was an outbreak of typhoid fever in the North of England, in which fifty cases were proved to be milk-borne from a farm where a case of typhoid fever was being nursed. Yet so long ago as the reign of Sir John Simon it was impressed upon all concerned that a case of infectious disease should not be nursed on a milk farm. Apparently each generation had to learn afresh from new disasters. In America the Schick test was widely used as an instrument for the prevention of diphtheria. But in this country, although the truth of it was known as well as it was known in New York, it was only with difficulty that it was made applicable at all. Another instance was furnished by tuberculous infection. Tuberculosis was one of the most preventable and in some ways the most curable of maladies. The answer to tuberculosis was known—it was the sanatorium principle. But the sanatorium principle had still to find its application in the homes of this country. Again, there were 700,000 women who would give birth to children during the next twelve months, but not 200,000 of them would take full advantage of ante-natal care and supervision during pregnancy, with the result that child-bearing was still hazardous in England. There was one great positive result to which modern hygiene could point. A child born to-day had a prospect of life some ten or twelve years longer than had a child born two generations ago, but what he wanted to see was disease "turned off at the tap," and the only way to bring that about was to have an educated people. Dr. Balfour's paper which occasioned these remarks by Sir George Newman was a comprehensive survey of public health in its more popular aspects, from Leviticus and Deuteronomy right down to the protocols of the Health Section of the League of Nations. He spoke at length of the need for the education of the lay public. Perhaps, like other preachers of good causes, Dr. Balfour showed too great faith in the power of the press. He urged a closer co-operation between the public authorities and the newspapers, whose columns should be open to the skilled hygienist for the deliverance of his message, not in his own name, but under the aegis of a health department. It is often forgotten, however, that newspapers are neither educational nor philanthropic institutions, but commercial concerns, and that, in those which have the widest popular appeal, a sensational, sometimes an alarmist, titbit—often inaccurate in its information, and always inaccurate in its emphasis—will have precedence over any amount of "copy" officially furnished. Dr. Balfour seemed to have discovered for himself, so far as the cinematograph was concerned, the weakness of propaganda when subject to the restraints rightly imposed by public authority. When he went to see a private exhibition of the "Swat that fly!" film, the operator, an American, said to him, "This kind of thing don't cut ice. Let me show you something with 'pep' in it," and he proceeded to demonstrate a comic film which illustrated grotesquely the advantages of life insurance—apparently the style of film to which, however good its motive, a public department could hardly give its imprimatur. That is one of the difficulties besetting the path of hygienic education. Dr. Balfour devoted much of his paper to the consideration of the private medical practitioner discharging the function, not of curing the sick, but of keeping people in health. He quoted from Dr. John Dill Robertson of Chicago, who has put this point forcibly, and even acridly, and has not hesitated to charge the general practitioner with criminal negligence for his failure in this respect. But Dr. Balfour pointed out that the same plea was urged, more quietly and effectively, long ago by Dr. John C. McVail, in the memorandum accompanying his report on Poor Law medical relief, and that Dr. McVail had more recently elaborated his theme by envisaging the physician as the health guardian, the confidant, and the philosopher at all stages of life. On the question of the possibility of periodical medical inspection of the population Sir George Newman also had a word to add. He said that the late Dr. Hermann Biggs, State Commissioner of Health for New York, discussed this point with him on his very last visit to London. Dr. Biggs was more hopeful than he—but then he came from a hopeful country!

HUXLEY.

THE centenary of the birth of Huxley has been celebrated this week. He was born on May 4th, 1825, at Ealing, then a village, near London. He was a brilliant boy, and entered Charing Cross Hospital Medical School with an open scholarship at the age of 16. He passed the first M.B.Lond. in his twentieth year, and within twelve months was appointed to the Medical Department of the Royal Navy. Huxley therefore began life as a member of the medical profession, though without any formal diploma; it was not until 1862 that he became M.R.C.S., and not until 1883 that he was elected F.R.C.S. He had, however, already distinguished himself as a physiologist, and after a short time at Haslar was appointed surgeon to the *Rattlesnake*, which, under the command of Captain Owen Stanley, a brother of Dean Stanley, was during the next four years engaged on a survey of the coasts of New Guinea and the Louisiade Archipelago, and of the Barrier Reef of Australia. His energy and industry while with the *Rattlesnake* expedition were extraordinary, and within a year of his return to this country he was elected F.R.S. at the very early age of 26. He entered upon his career as the champion of science, therefore, with a solid basis of technical achievement. His significance for the age was that he became the fearless defender of the freedom of science and of its right to pursue its own course untrammelled by authority. Convinced himself by the study of Darwin's *Origin of Species*, Huxley, through the sheer strength of intellect displayed in his brilliant advocacy by speech and pen, forced the public to listen, and left no man or woman of education the excuse to ignore or misunderstand the true meaning of evolution, and its importance, not only to zoology and botany, but also to palaeontology and anthropology, and even to social problems. His success

in accomplishing this self-imposed task has perhaps rather obscured his extraordinary achievements as a laboratory and field worker. He took to writing as a means of livelihood—as a means, at any rate, of augmenting his exiguous salary as professor of palaeontology and professor of natural history at the Royal School of Mines. It was characteristic of him that when he decided to become a writer he determined to write well. He attained his object not without labour, and even to the last was in the habit of making four or five drafts of everything he published. He came to exercise a tremendous influence. "Darwin's bulldog," as he styled himself, was for years the intermediary to whom the thinking public who were not skilled naturalists owed their deepest appreciation of the problems involved. He was quite fearless. He never allowed himself to be overawed by temporal or spiritual dignitaries, and after the famous Oxford meeting of the British Association in which he administered a well merited rebuke to the then Bishop of Oxford (Wilberforce), he described himself as being "episcopophagous." He had perhaps a certain joy in combat, as was natural in so skilful and sturdy a fighter; but all through his public life of nearly forty years he was actuated always and in all matters by a simple-minded love of truth.

DR. JOHNSON'S DOCTORS.

ANOTHER social evening, with Sir StClair Thomson as host, was held at the house of the Royal Society of Medicine on May 4th. The brief address on this occasion was delivered by Dr. Robert Hutchison, who showed some Johnson portraits, the best of them by Opie, and spoke of the connexion between the great lexicographer and medicine. Samuel Johnson, said Dr. Hutchison, paid many high compliments to the medical profession. The most elegant, according to Boswell, was his remark that "every man has found in physicians great liberality and dignity of sentiment, very prompt effusion of beneficence, and willingness to exert a lucrative art without hope of lucre." Johnson might well have been impressed by the work which physicians did for nothing, because he never paid them any fees himself. "Illness is of little expense to me," he wrote, "thanks to the generosity of my physicians." After Dr. Richard Warren had been called into consultation Johnson said to him, "Sir, you come at the eleventh hour, but you shall be paid the same as the others"—and caused his servant to put a copy of the *Lives of the Poets* in Dr. Warren's coach. Warren was one of the most successful physicians of his day from a monetary point of view, with an income for many years of at least £9,000. Johnson was quite wrong in his statement that no estate had ever been made by medicine. Richard Mead was a wealthy man, Radcliffe had been a munificent benefactor of Oxford, Lettsom and Fothergill had very large incomes. In fact, Dr. Hutchison believed that, relatively speaking, the practice of medicine was more lucrative in the eighteenth century than to-day. Of the doctors of Johnson's circle, one of his most intimate friends was Thomas Lawrence, for seven years President of the Royal College of Physicians, who had a bond of sympathy with Johnson in that, like him, he suffered from convulsive movements of the head. Another was William Heberden, whom Johnson called the last of the learned physicians. Then there were Brocklesby, George Fordyce, and Lettsom. Another medical celebrity was the eccentric Sir Thomas Browne, who went about carrying a muff, a copy of Horace, and a spy-glass, and was about the only person who ventured to oppose Johnson when he was extolling Oxford at the expense of Cambridge. Nor should that curious irregular practitioner, Robert Levett, be left out of account.[1] Johnson's own medical knowledge, Dr. Hutchison continued, must have been considerable. He had some sound views, disapproved of periodical bleeding, fulminated against rapid diagnosis—"life is not to be sacrificed to an affectation of quick discernment"—had a strong contempt for polypharmacy, and in a hard-drinking age was himself abstemious. When taken ill at Montrose he wrote out a prescription for himself in technical characters, and he did not hesitate even to prescribe for the President of the Royal College of Physicians; when Lawrence had paralysis of the hand Johnson suggested treatment by electricity. Of the physicians who attended him towards the close of his days were mentioned William Cruikshank, "a sweet-blooded man," the surgeon who was called in to scarify his legs; Percival Pott, Sir Lucas Pepys, and Sir Richard Jebb. Dr. Hutchison described Johnson himself as one who was robust but not healthy; he suffered from various complaints, including scrofula, habit-spasms, and melancholia; Johnson said of himself that his diseases were "an asthma, a dropsy, and, what is less curable, seventy-five." All must admire his sterling common sense, his hatred of fads, his great personal courage, his compassion and charity, and the fortitude with which at last he approached death. Had his steps turned to medicine he could hardly have been a great physician. Certainly he could never have acquired the bedside manner, and his appearance in the sick-room might, as was said of Levett, have disgusted the rich and terrified the poor. Mr. Augustine Birrell, who proposed a vote of thanks to Dr. Hutchison, said that he had always admired Johnson, but after seeing portraits of twenty of his doctors he marvelled at him the more, wondering how he had survived at all. Mr. Birrell was not impressed by the portraits, save only those of Cruikshank and Brocklesby. Both these were evidently delightful fellows, though one of them (Cruikshank) took to drink, and the other was a failure in his profession!

[1] See BRITISH MEDICAL JOURNAL, April 11th, p. 705, where by inadvertence Levett's Christian name is given as "William."

HARVEY MEMORIAL: REBUILDING HEMPSTEAD CHURCH TOWER.

WILLIAM HARVEY died in his eightieth year on June 3rd, 1657, and on June 26th his remains were deposited in a vault adjoining the parish church of Hempstead in Essex. He was "lapt in lead," and on his breast in great letters was his name, "Doctor William Harvey." By the middle of the last century this vault underneath the Harvey Chapel had become ruinous. On January 28th, 1882, the tower of the church fell towards the south-west; it is still a heap of stones in the churchyard. On October 18th, 1883, the body was removed from the vault and placed with all due reverence in a handsome white marble sarcophagus erected by the Royal College of Physicians of London in the chapel above the vault. With it was deposited a leaden case containing the edition of the works of Harvey published by the College in 1766, and a vellum memorial recording the circumstances of the removal.[1] It is now proposed to restore the fallen church tower as a further memorial to William Harvey. The village of Hempstead lies in a sparsely populated agricultural district, seven miles from the railway station of Saffron Walden and some fifty from London. It is therefore necessary to make a far-reaching appeal for the sum of £5,000 which is needed to carry out the project. The clergy of the diocese and the Royal College of Physicians have given their hearty support, and a committee has been set up, including the bishops of the three neighbouring dioceses; the President and other distinguished Fellows of the Royal College of Physicians; Sir H. K. Anderson, M.D., Master of Gonville and Caius College, Cambridge (of which Harvey was a member); Sir Charles Sherrington, M.D., President of the Royal Society; Sir Archibald Garrod, M.D., Regius Professor of Medicine

[1] See BRITISH MEDICAL JOURNAL, October 20th, 1883, p. 790. Of those Fellows of the College of Physicians who took part in the ceremony there described, two, Sir Richard Douglas Powell and Sir Dyce Duckworth, are still with us.

at Oxford; Sir D'Arcy Power; and Dr. A. D. Brenchley, Master of the Society of Apothecaries. The chairman is Lord Stanmore, treasurer of St. Bartholomew's Hospital, to which Harvey was physician. Donations from members of the medical profession may be sent to Dr. Sidney Phillips, joint honorary secretary of the fund, at the Royal College of Physicians, Pall Mall East, S.W.1.

THE CHARCOT CENTENARY.

As already announced, the centenary of the birth of Charcot will be celebrated in Paris at the end of this month. Professor Pierre Marie will deliver an éloge of Charcot at the Académie de Médecine on the afternoon of May 26th, and on the evening of the same day at a meeting at the Sorbonne, which will be attended by the President of the Republic, M. Babinski will deliver an address, and will be followed by the official delegates of foreign Governments. Addresses will also be given by the Dean of the Paris Faculty of Medicine, by representatives of the Académie des Sciences, the Académie de Médecine, the Institut Pasteur, and a number of medical societies. On May 27th a visit will be paid to the Clinique Charcot and the Salpêtrière. On the afternoon of the following day the Municipal Council of Paris and the General Council of the Seine will hold a reception at the Hôtel de Ville. The Royal College of Physicians of London will be represented by Dr. Gordon Holmes. Dr. Farquhar Buzzard, who will attend the centenary as president and representative of the Neurological Section of the Royal Society of Medicine, will deliver a short address on Charcot at the social evening of the Royal Society of Medicine to be held on Monday, June 15th, and there will be on this occasion an exhibition in the library of books and articles by Charcot and his pupils.

AMERICAN RESEARCH IN VENEREAL DISEASE.

In America, in recent years, much attention has been given to the problems of syphilis and gonorrhoea, and a *Report of the Scientific Researches on the Venereal Diseases*, prepared by Dr. E. L. Keyes, has been recently published by the American Social Hygiene Association (370, Seventh Avenue, New York) by agreement with the United States Interdepartmental Social Hygiene Board. This report is essentially an epitome of the published accounts of the scientific researches concerning venereal disease that were financed and directed by the Social Hygiene Board during the years 1918 to 1921. The American Social Hygiene Association made grants subsequently to some of the investigators in order to enable them to complete their researches. The choice of subjects seems to have been particularly happy, and, though no brilliant discovery is recorded, a definite advance has been made in methods of diagnosis and treatment. The difficult problem of recognizing types of gonococci was attacked, and the conclusions reached appear to be much the same as those of British investigators—namely, that at present it is not possible to separate the strains into definite classes. Much valuable information is given as to the successful cultivation of the gonococcus, and Torrey and Buckell very rightly emphasize the necessity of a moist atmosphere for optimum growth—a point not mentioned by most writers. It would appear, however, that they allow rather too wide a margin for the reaction of the medium, and overlook the many advantages which hydrocele fluid presents over other kinds of enriching agent. Oxygen tension is not considered to be of importance. The complement fixation test for gonorrhoea has received a due meed of attention, and it is claimed to be rather more valuable in women than either cultures or films for diagnostic purposes. Much study has been devoted to the staining of *Spironema pallidum*, and a simplified tissue stain is given which appears to give good results; it remains an open question, however, whether staining is a better method than dark ground illumination for detecting spirochaetes in surface lesions for diagnostic purposes. In this country the latter is favoured, for the reason that it is simple and rapid, and also brings out two distinguishing features of the organism—its motility and whiteness. The report, which includes a full bibliography, is an excellent summary of a valuable inquiry into admittedly difficult problems. Both clinicians and pathologists will find much information to add to their armamentaria for the diagnosis and treatment of venereal diseases.

MEDICINE AT THE ROYAL ACADEMY.

THIS year's exhibition at the Royal Academy of Arts, like its predecessors, contains a number of medical portraits and a few other exhibits of immediate interest to our readers. Of the oil paintings, No. 156 is an admirable portrait by Charles Sims, R.A., of Dr. Matthew Hay, the veteran professor of forensic medicine in the University of Aberdeen, and medical officer of health for the city from 1888 to 1923, who is shown seated in doctor's scarlet robe; it is described as a civic and academic tribute. The next gallery has a picture (225) by the same artist, entitled "The Children's Ward, St. Thomas's Hospital"; this is a balcony scene, and the boy patients, the nurses, and a house-surgeon form a delightful group, with the river, St. Stephen's clock tower, and Westminster Bridge in the background. Near at hand (192) is a portrait of a Hunterian professor, Mr. Alexander Fleming, in F.R.C.S. gown, by John Wheatley—a curious piece of work, but interesting. In strong contrast with this is the presentation portrait of Sir Humphry Rolleston, Bt., K.C.B. (460), by George Henry, R.A., a gift to St. George's Hospital by his friends and pupils. It is a dignified and pleasant likeness of the new Regius Professor at Cambridge, seated in a red chair and robed in the gold-embroidered presidential gown of the Royal College of Physicians, with the silver caduceus of John Caius in his hand. Another ceremonial painting, but more sombre in tone, is the three-quarter length portrait by Fiddes Watt of Sir Gilbert Barling, Bt., F.R.C.S. (371), robed as Vice-Chancellor of the University of Birmingham. The smallest of the medical portraits in oils, but by no means the least effective or characteristic, is a "study in scarlet" by Maurice Greiffenhagen, R.A., entitled "Sir Donald MacAlister of Tarbert, Bt., K.C.B., M.D." (477). Obvious here is the painter's delight in a subject worthy of his brush. Other oil paintings which will appeal to medical visitors are the fine group "A Street Accident," by Glyn Philpot, R.A. (79); "The Founder's Tomb, St. Bartholomew the Great, West Smithfield," with Rahere's recumbent figure well known to all Bart's men, by Miss Irene Ryland (443); also, but from another point of view, Walter Sickert's "Freckled Boy" (460), whose features give a hint of something in a big glass jar at the museum in Lincoln's Inn Fields. Among the works of sculpture in the Lecture Room is a bronze bust of Dr. Maurice A. Cassidy (1344) by Henry Pegram, R.A. Here also is a case of exhibits illustrative of the work of the Royal Mint during the past year (1363); it includes the prize medal of the Harveian Society of London and the Rivers Memorial Prize Medal of the Royal Anthropological Institute, both by Langford Jones; and the nurses' medal for the Bristol Royal Infirmary, an excellent little work of art by T. H. Paget. Medical visitors this year should certainly go into the Architectural Room, where, besides a number of designs for hospitals and university buildings, are the large-scale model (1201) and the plan of site (1210) for the wonderful Memorial to the Missing at St. Quentin, by Sir Edwin Lutyens, R.A., architect of the new British Medical Association House in Tavistock Square, now nearing completion.

FOOD POISONING.

THE Medical Research Council has issued a special report by Dr. W. G. Savage and Mr. Bruce White on food poisoning,* founded on a study of 100 recent outbreaks in this country, most of which have not been previously published. It is prefaced by a general survey of the different causes of outbreaks of food poisoning, the epidemiological and clinical features of food poisoning, the paths of infection, and prevention of food poisoning. It is an important addition to the literature on food poisoning, and the sections dealing more especially with the clinical features and prevention are discussed elsewhere in a leading article.

This report (No. 92) is a continuation of the special studies of Dr. Savage and Mr. White, published in the Medical Research Council Report No. 91, and entitled "An investigation of the salmonella group, with special reference to food poisoning" (see BRITISH MEDICAL JOURNAL, February 21st, 1925, p. 373), which dealt chiefly with the classification and distribution of the salmonella bacteria.

Causes of Food Poisoning.

By far the commonest cause of food poisoning in this country is infection of food by living salmonella bacteria or by the toxins of these microbes. Salmonella bacteria multiply rapidly in food without betraying their presence by any obvious decomposition, and they secrete powerful endotoxins capable of resisting temperatures as high as 100° C. In 20 of the 100 outbreaks recorded in this report living salmonella bacteria were proved to be the agents of infection, and in 14 of these 20 outbreaks *B. aertrycke* was the particular member of the group found. The isolation of these bacilli is a difficult procedure, for they are fastidious in their diet, and it is worth while noting, in view of the remarks we make elsewhere about the more thorough investigation of outbreaks of food poisoning, that in 6 of these outbreaks the bacilli were only captured from material obtained at *post-mortem* examinations; if this material had not been available the bacterial cause would not have been definitely established, though deductions might, of course, have been made from other examinations.

It is well known that food in which salmonella bacteria have grown may continue to be poisonous after the bacilli themselves have been destroyed, because the toxin which these germs secrete is more resistant to heat than are the living cells. Food poisoning by the toxins of the salmonella bacteria alone is perhaps the most difficult of all to analyse, because ingestion of these toxins leaves no specific stamp upon the body tissues: thus agglutinins do not appear in the blood serum. It might be thought that the poisonous nature of the food could be demonstrated by feeding experiments on animals, but this method is not often successful because animals are exceptionally resistant to these toxins. The method of injecting extracts of suspected food parenterally has led to many false conclusions in the past and does not now command much confidence. A promising new method of study was referred to in Report 91—namely, the possibility of demonstrating toxic properties in food by feeding animals with large quantities, killing the animal nine to twelve hours afterwards, and examining the stomach and intestines for evidence of inflammatory reaction. Another new method which we believe Dr. Savage was the first to employ, at any rate on an extensive scale, is the demonstration of the production of specific agglutinins to the salmonella bacilli through the injection into animals of suitable emulsions of the incriminated food. By one method of investigation or another the authors of this report have satisfied themselves that 17 out of the 100 outbreaks should be ascribed to salmonella toxins.

Four of the outbreaks were caused by bacteria of the dysentery group. The chief interest of this observation is that it widens our view of food poisoning, for until recently it would have been denied that bacteria of the dysentery type could cause outbreaks of food poisoning indistinguishable in their clinical characters from salmonella infections.

Only one outbreak of botulism—that at Loch Maree—is represented in this series.

To summarize the cause of these 100 outbreaks of food poisoning, epidemiological and laboratory investigations, separately or together, provided evidence that 66 outbreaks were due to members of the salmonella group of bacilli, 4 to members of the dysentery group, and 1 to *B. botulinus*. The remainder were either of definitely chemical origin, or possibly due to some undetected microbe, or were not examples of true food poisoning.

Epidemiological Features.

Food poisoning outbreaks are commonest in the warm months of the year. The peccant food was almost invariably perfectly wholesome as judged by sight, taste, and smell. Turning to the vehicles of infection, we find that tinned food constituted 42 per cent. of the whole. Nearly all the outbreaks from undestroyed bacterial toxin arose from canned food, whereas "made up" meat was much the commonest vehicle for the living bacilli, and milk products for the remainder. The infectivity rate was high, and often all partakers of the incriminated food were made ill.

Special Types of Food Poisoning.

Apart from the salmonella type, there are two other forms of food poisoning which the report discusses at some length, and to which brief reference should be made here—namely, botulism and cheese poisoning.

Botulism.

Nowadays a good many different types of illness are being falsely labelled botulism, so it is useful to call attention to certain characteristic symptoms of this disease and distinguishing features of the bacillus in order to facilitate the early diagnosis of outbreaks and prevent cases of illness being brought forward as examples of botulism without reasonable probability. A provisional diagnosis of botulism must be based on symptoms and epidemiological factors; the conversion of a provisional into a definite diagnosis is the task of the bacteriologist. The characteristic symptoms of botulism are well known—eye disturbances, such as double vision; throat symptoms, such as difficulty in swallowing and talking; general muscular weakness. It is equally important to know the symptoms which do not occur—thus pain is absent, the cardinal symptoms of salmonella type of infection are not found, constipation rather than diarrhoea is the rule. Fever is rare. Mentality and consciousness are usually clear to the end.

Distinguishing epidemiological and technical points stressed by the report are that *B. botulinus* is an anaerobe, and the food vehicle must be such as will allow growth only in the absence of oxygen. *B. botulinus* is a proteolytic anaerobe, and will originate decomposition changes in the food if it multiplies sufficiently to yield toxin, a feature which distinguishes it from the behaviour of salmonella bacteria, which do not betray their presence by any evident decomposition. The physical condition of the food is therefore an important diagnostic point, but though the food is altered the changes may be slight, and only detected by an expert. Perhaps, as at Loch Maree, they may be missed altogether. Finally, it is important to remember that, owing to the high potency of *botulinus* toxin, nearly everyone who partakes of food infected with this organism becomes ill. To the salmonella type of infection some individuals are much more resistant than others, and may escape.

Cheese Poisoning.

Cheese poisoning has always been a puzzling disease. There were eight instances of it in the present series. The most characteristic symptom was abdominal pain, sometimes attended with vomiting, less frequently with diarrhoea. Everything pointed to the ingestion of a gastro-intestinal irritant. The incubation period in these 8 cases was about four to twelve hours, and the infectivity rate about 90 per cent. The cheeses appeared perfectly natural and wholesome, and the types of cheese responsible were not those in which secondary ripening changes of a decomposing nature were customary.

From the experimental work recorded in this report, particularly that in relation to outbreak No. 41, it seems almost

* Medical Research Council, Special Report Series, No. 92. *Food Poisoning: A Study of 100 Recent Outbreaks.* By W. G. Savage, M.D., B.Sc., and P. Bruce White, B.Sc. Price 2s. 6d.

certain that the toxic agent must have been the product of bacterial activity. Orthodox opinion held formerly that a toxic substance known as tyrotoxicon was responsible for cheese poisoning, but Dr. Savage and Mr. White looked for this substance in vain. They think that it may have been the cause of outbreaks in the past, but they note that there are few if any references to the finding of this body in poisonous cheese since the days when the ptomaine theory of food poisoning was abandoned, and conclude that tyrotoxicon has no connexion with cheese poisoning as met with at present. Experiments reported by the authors demonstrate that some salmonella bacteria will survive for several weeks in cheese or acid whey, though they do not appear to multiply, but rather diminish, therein. Such infected cheese was not specifically toxic when fed to laboratory animals. Evidently the toxic agent in cheese poisoning may not have been the same in all cases, but probably the commonest cause was an undestroyed toxin of some special germ, and in some cases members of the salmonella group of bacteria were to blame.

Paths of Infection.

How does food become infected with poisonous bacteria? This is the vital question, but search for an answer has been hampered by insufficient material for analysis. More knowledge is needed of the primary reservoir of these bacteria, and practically nothing is known at present of the way in which they get into food. It is to be regretted that previous investigators for the most part have been content with mere evidence of excretal contamination of the food, not reflecting that the salmonella bacteria are not constituents of the normal excreta of man or animals.

Speaking of the primary reservoir of infection, Dr. Savage and Mr. White point to three possibilities. These germs may have a habitat outside the body, but there are no facts which suggest the likelihood of this. Again, infection may come from a human case, but such an origin is rarely suggested by epidemiological survey, and is rendered unlikely by the fact that sufferers from food poisoning disease do not excrete salmonella bacilli for more than a few days. Thirdly, infection may come from an animal source—either from the meat or milk of an infected animal being used for food, or due to infection of previously wholesome food with bacilli from an infected animal.

After considering the pros and cons of each of these the authors conclude that in the majority of the 100 outbreaks reported the food was originally sound, but became infected with salmonella bacteria from outside sources. The particular channel of contamination in most of the outbreaks remained undetermined.

This part of the report closes with a memorandum giving instructions as to the collection and transmission of samples for bacteriological and chemical analysis. The remaining fifty pages contain the detailed history of the 100 outbreaks of food poisoning on which this report is based.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee thirty-two cases were considered and £476 voted to thirty applicants. The following is a summary of some of the cases relieved.

Widow, aged 62, of L.S.A. who died in 1923. Applicant lets rooms to provide for herself and two daughters living at home. Her total income is £55 per annum, but a daughter who is a nursery governess pays her 10s. a week. Applicant asks for a grant towards 50 guineas per annum for a son who has been in Earlswood for seven years. Voted £20 in two instalments.

L.R.C.P. and S.I., 1879, aged 74. During the war was on sea transport. He received £52 10s. for acting as locumtenent during the last twelve months. Room, breakfast, and supper cost him £1 a week. Owing to influenza and phlebitis has not been able to pay his landlady, to whom he owes £28. Voted £30.

Daughter, aged 56, of M.R.C.S.Eng. who died in 1914. She is in ill health and has rheumatoid arthritis. Plain needlework brought her in £12, and she has £14 a year from War Loan and £5 from the National Benevolent Institution. Rent 3s. a week. The Fund local secretary says, "With some money a better room could be got for her than the miserable one she now occupies." Voted £26 in twelve monthly instalments.

Widow, aged 49, of L.R.C.P.Edin. who died in October, 1924. She is left with three children aged 19, 12, and 10, and only £40 a year. The eldest son is a farm pupil and only receives pocket money; the other children are at school. Applicant wishes to sell out her capital and start a business, and asks the Fund to help her with the education of her two youngest children until she is established. Voted small grant and referred to the Guild.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., at 11, Chandos Street, Cavendish Square, W.1.

England and Wales.

REBUILDING THE MIDDLESEX HOSPITAL.

IT has been decided to rebuild on the present site, at a cost of £500,000, the main portion of the Middlesex Hospital, including the east and west wings, the connecting block, and the old houses in which many of the nurses are accommodated. The present buildings, erected between 1756 and 1780, replacing a smaller hospital opened in 1745, have become seriously damaged in consequence of the lapse of time and faults inherent in their structure. The foundations extend only three or four inches below the level of the area, the floors are full of dry rot, and the ceilings are cracking. Moreover, in spite of the many extensions that have been made, the facilities that were adequate for the 102 in-patients of the first recorded year, 1746-47, are now unequal to the demands of the special departments and the additional work consequent on the triumphs of medical research with which the Middlesex Hospital has been so frequently associated. The cancer department of the hospital is one of the portions that will remain untouched under the reconstruction scheme, but greater accommodation is required for the in-patients associated with the special departments, such as the aural, neurological, and radiological, and also for the medical school. During each year some 6,000 in-patients receive treatment, and yet there is always a long waiting list; in the out-patient department seven and a half million attendances have been registered since the foundation of the hospital. The approval of representatives of the King Edward Hospital Fund has been obtained for the rebuilding, and arrangements are being made so that during the work the in-patient accommodation shall not be reduced by a single bed. The existing site of the building presents several advantages; the land on which it stands is held at a nominal rent through the generosity of the Berners family, and the hospital serves a district containing one and a half million workers. In close association with it are the more modern buildings, including the cancer wing, the research department, the *x*-ray and physical medicine section, and the medical school. Temporary steps already taken to avert any danger include the closing of two wards, and the strutting of the basement and of fourteen wards with heavy baulks of timber. All the old buildings will be demolished as soon as accommodation for the patients can be found. The rebuilding of the hospital is a matter of necessity, not of choice, since the condemned blocks have deteriorated too far for less radical treatment to be possible.

TUBERCULOSIS ARRANGEMENTS IN LONDON.

A report on tuberculosis arrangements in London was submitted to the London County Council by its Public Health Committee on May 5th. For the year 1925-26 provision has been made for 1,793 beds for adult cases; of these, 1,019 will be available in the institutions of the Metropolitan Asylums Board and 774 in voluntary institutions. Twenty beds have been taken at Burrow Hill Colony for cases specially selected for extended sanatorium treatment. Grove Park Hospital is being prepared for the reception of adult advanced cases, and it is expected that arrangements will be completed at an early date. The provision for children comprises 800 beds, of which 590 are in the institutions of the Metropolitan Asylums Board. Six beds have been taken at the New End Hospital, Hampstead, for artificial light treatment of specially selected cases, and the Public Health Committee is considering the question of providing for a large-scale test of artificial light treatment. The dispensary service now includes twenty-one municipal dispensaries, one voluntary dispensary largely aided by a borough council, and nine dispensaries, also aided by borough councils, at hospitals. The history of 3,060 adult patients under treatment during 1921 has been ascertained. The records up to July, 1924 (that is, two and a half to three years after completion of residential treatment), showed that among 512 cases in which bacilli had been absent from the sputum, 91.2 per cent. were alive; out of 344 cases in which, although bacilli were found in the sputum, there was only slight constitutional disturbance,

and in which the obvious signs were of very limited extent, 78.2 per cent. were alive; of 858 cases with profound systemic disturbance or constitutional deterioration, or with grave complications, 9.2 per cent. were alive, and of 1,346 cases which fell somewhere between these last two groups 51.7 per cent. were alive. The committee is not satisfied as to the number of early cases coming under treatment, and is investigating the possibility of obtaining earlier notification. The arrangements for children include five special open-air schools, accommodating 365 children, and it is intended to increase this provision. The committee quotes mortality figures which reflect the success of the co-ordinated efforts of public authorities and voluntary agencies. During the year 1923 the deaths from tuberculosis in London numbered 5,285, the lowest number hitherto recorded, and 439 below the previous year.

Essex County Hospital, Colchester.

During the past year there has been a considerable increase in both the number of in-patients and out-patients at the Essex County Hospital, Colchester, and, though the ordinary income rose by about £1,500, a deficit of £2,844 resulted from the year's working. A contributory scheme for workers and their families has been launched in the country districts served by the hospital, and after being in operation for three months has produced gratifying results. It is expected that during the current year very substantial help will be received from this source. Valuable support has been given also by the Colchester and District Workers' Committee. A serious shortage of accommodation is handicapping the work in both the in-patient and the out-patient departments, and the nursing staff is restricted similarly. The new out-patient block is nearing completion, and twelve new wards for private patients will also become available, reducing somewhat the pressure on the general surgical wards. A fund has been opened for the erection of a new nurses' home.

Sir Malcolm Morris Memorial.

The fund inaugurated a year ago to perpetuate the public services of the late Sir Malcolm Alexander Morris, K.C.V.O., F.R.C.S.Ed., has now been closed, and the committee, representative of the various organizations and institutions with which he was intimately associated, has allocated the money raised in providing a prize at St. Mary's Hospital, Paddington, to the final year's student best qualified in dermatology, and in endowing a public lectureship under the Chadwick Trust upon the preventive aspects of public health and upon dermatology in alternate years.

Scotland.

Inaugural Lecture in Therapeutics.

Professor Lorrain Smith, Dean of the Edinburgh Faculty of Medicine, presided at Professor D. M. Lyon's inaugural lecture on the development of therapeutics. The lecturer said that it was interesting to recognize traces of long-discarded theories in the medical teaching of to-day. The primitive mind had recognized three views as to the cause of disease—the religious view that disease was due to some spiritual tendency, the magical view that disease was due to the action of some human agent, and the natural view that disease was due to simple natural causes. The primitive savage often regarded disease as a material thing which could be magically transferred into a victim's body from a distance, and a strong strain of magic was still to be found in the belief of the lay community. During the four centuries since the Renaissance authority had been suspect and traditional reputations had been submitted to close scrutiny. It seemed highly probable, therefore, that there must be some virtue in drugs recommended by successive generations of trained observers. Many laymen apparently believed that for each ailment there existed a satisfactory combination of drugs and that no proper treatment was possible without the inevitable "bottle." Modern practice, however, was tending to give drug therapy its proper place in treatment. Many other remedial measures were now in use, such as by thyroid and adrenaline extracts, antitoxic serums for diphtheria and tetanus, and appropriate vaccines for the prophylaxis and treatment of the enteric group of diseases. Massage and remedial exercises were now extensively used, and radium emanations, Roentgen rays and electricity, the ultra-violet rays, Finsen light, and heliotherapy had all been pressed into the service of treatment. Psychotherapy was a recognized branch of comparatively recent introduction, and, divorced from the showy tricks of hypnotism and mesmerism, it had taken its legitimate position in treatment. The number of true curative specifics was limited, but other drugs, though not leading to cure, possessed definite actions in restoring health, such as thyroxin in myxoedema and insulin in diabetes, and such drugs as digitalis in heart failure and adrenaline in asthma were extremely valuable. A certain number of diseases were still beyond assistance, and the patient medicine vendor was alive to the limitations of the healing art. Though for the most part the ingredients of proprietary medicines were drugs employed in legitimate medicine or rejected by the profession as useless, the danger associated with such practices was real, so that it was time that the public took steps to control this trade.

Edinburgh Maternity Hospital Needs.

Dr. William Robertson, medical officer of health for Edinburgh, who presided over the annual meeting of subscribers to the Edinburgh Royal Maternity and Simpson Memorial Hospital, said that the total number of cases treated during last year had been 92 fewer than in the previous year, which had shown the highest record in the history of the institution. Out of over 9,000 births during the year in Edinburgh, fully 3,000 were attended at the Simpson Memorial Hospital. It thus did excellent humanitarian service, but it also did work of great preventive and educational value, and the city was under a deep debt of gratitude to it for the knowledge disseminated by its medical and nursing staff. He hoped shortly to see a great extension of maternity and child welfare work in connexion with the hospital. The fact that Edinburgh was a great centre of medical education must not be lost sight of, and for this purpose more accommodation was required in the Maternity Hospital. The Rotunda Hospital of Dublin had for long possessed a magnetic attraction for students of medicine, and an enlarged maternity hospital in Edinburgh would exercise an equal attraction. As long ago as November, 1923, the directors had made suggestions to the managers of the Edinburgh Royal Infirmary as to a suitable site for a new maternity hospital, and as to the form and extent of the desired affiliation between the two institutions. Dr. T. G. Nasmyth said that the infirmary managers were negotiating with the Merchant Company to get part of the site of George Watson's College, and they had addressed to the secretary of the Maternity Hospital recently a letter saying that, looking to their further needs, they might not be able to give the Maternity Hospital any part of the site. This was disappointing. The financial statement showed a shortage of £1,094, as against £726 last year.

Dr. Dawson Turner.

At a meeting of the managers of the Edinburgh Royal Infirmary, held on April 27th, Lord Provost W. L. Sleigh presiding, the retirement of Dr. Dawson Turner on account of ill health from the post of extra medical electrician was intimated. The board placed on record its appreciation of the services rendered to the Royal Infirmary by Dr. Dawson Turner for a period of twenty-nine years. He had been appointed assistant medical officer to the medical electrical department in 1896, and promoted to full charge of the department in 1901. After ten years spent in the practice of radiology he became extra medical electrician, and in 1914, at his own request, in view of the deleterious effect of x rays upon his system, his charge was restricted to the care of cases requiring radium alone, and he had continued to hold this special appointment to the present time. The board further expressed its obligation to Dr. Turner for his generosity in employing his own stock of

radium from time to time to supplement the quantity owned by the Royal Infirmary, and invited him to continue his association with the institution as honorary consulting physician in radiology.

NEW SCHEME FOR FALKIRK INFIRMARY.

A meeting was held in the Town Hall, Falkirk, on April 27th to start a campaign for the collection of £50,000 towards the erection of a new infirmary for Falkirk and district. Provost Muirhead presided over a large gathering, which included representatives from other burghs in the district. The Marquess of Linlithgow stated that the scheme would cost the district approximately £100,000, but almost one-half of that had either been already subscribed or was in sight. The present infirmary had begun in a small way in 1889 as a cottage hospital of 14 beds, and had gradually been increased decade by decade until in 1920 it had been decided to alter its name to the Falkirk and District Infirmary, because for some time and in an increasing degree the institution had been serving a wider area than Falkirk itself. The accepted proportion of beds to population in these days was about 2 per 1,000, so that with a population of 100,000 in the area there should be 200 beds instead of the 74 in the existing infirmary. Institutional treatment would increase in importance as time went on, and it was to be expected that the population of the district would grow year by year. The infirmary had no pathological laboratory because there was no room for it, and the time had now come when it was necessary to proceed with a building scheme. A site of 11½ acres had been purchased on the estate of Gartcows, which would allow for future extension. The voluntary principle provided the zeal, elasticity, and adaptability that came from the absence of control from a distance and from eager people giving voluntary services. The governing body of the infirmary depended for money to carry on its operations upon the contributions of no fewer than 25,000 wage earners in the district, who were adequately represented on the governing body, and that was a guarantee against any too close a corporation in the management of the infirmary. The present appeal was an appeal to local patriotism, and he did not think that £50,000 was beyond the measure of those who had been brought up on Stirling Brig, Falkirk, and Bannockburn. Sir Norman Walker said that the committee appointed by the Scottish Board of Health had had no difficulty in satisfying itself that the supply of hospitals in Scotland was inadequate; a hundred years ago there were about 6 hospitals in Scotland, while to-day there were 286, and of these 132 were voluntary. It was possible to supply the needed beds in two ways—either by increasing the number of beds in the hospitals of the large centres, or, as Falkirk proposed, by developing the local hospital into a really efficient general hospital for the district. He knew that there was no place where rich and poor could be better looked after than in one of the general hospitals, and if persons were dying they would, of course, be taken into these hospitals, but the same ready admission could not at present be promised to persons suffering from some malady which was hampering their usefulness. For this reason he welcomed an increase of hospitals such as that at Falkirk.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons has this week passed the Gold Standard Bill through all its stages and has taken the report of the Budget resolutions imposing taxation. It has also passed the Rent Restriction Bill through report and third reading after a debate, in which Dr. Fremantle took part. The Moneylenders Bill has been read a second time and sent to the Committee of both Houses, and the Advertisements Regulation Bill, which has come down from the Lords, has been sent to a Grand Committee. The Therapeutical Substances Bill was down for second reading on May 5th, but was put back. Bills such as this may have to be postponed owing to the introduction of the Widows, Orphans, and Old Age Contributory Pensions Bill, which will require much time for discussion. In particular, the Government does not expect this session to get the Factories Bill beyond the second reading, nor to pass the Rating and Valuation Bill, which is regarded as a necessary preliminary to a general measure of Poor Law reform. Mr. A. V. Alexander, having won first place in the ballot for private members' motions on May 27th, has given notice that he will call attention to the overlapping and duplication of services and establishment due to the existence in England and Wales of rival local authorities dealing with the children, the sick and infirm, the aged, and the able-bodied unemployed.

The text of the Widows, Orphans, and Old Age Contributory Pensions Bill was issued on May 5th, with an accompanying memorandum and actuarial statement, but a fortnight was promised for its examination before second reading. The bill follows the lines sketched out by the Chancellor of the Exchequer when introducing the Budget, and comprises forty-five clauses. The provisions for pensions to widows and orphans would come into force from January 4th, 1926; those for the removal of the means limits on old age pensions drawn by persons over 70 on July 2nd, 1926, and for old age pensions at 65 on January 2nd, 1928. As a result of the reduction of the health insurance maximum age from 70 to 65, the health insurance contribution is being reduced by a penny a week for a man and by a halfpenny for a woman. But the actuarial memorandum explains that though the right to sickness and disablement benefits will cease at 65, when the new pensions accrue, the proposals in the bill make no alteration in the existing right of an insured person to receive medical benefit for the whole of life.

Small-pox.

Sir William Davison asked the Minister of Health, on May 5th, whether his attention had been called to the recent increase in cases of small-pox throughout the country; what was the total number of cases notified during the past three months; and whether he had received any report on the causes which had brought about the recent increase in such cases.

Sir Kingsley Wood said that the total number of cases of small-pox notified in England and Wales during the twelve weeks from January 4th to March 28th was 1,609. The Minister of Health had received numerous reports made by medical officers of the Department who had visited the districts in which small-pox was prevalent, and he was advised that the recent increase in the number of cases might be attributed to the neglect of vaccination in many of the invaded districts, and to neglect of the precautions which were essential if the spread of the disease was to be checked. He took this opportunity of informing the House and the country that Mr. Chamberlain was advised that there was no doubt the disease, now so prevalent in certain districts, was true small-pox, though happily mild in degree, and that vaccination was the only reliable protection against it. (This statement was greeted with protests from the Labour benches.)

Sir William Davison asked whether it was a fact that the late Minister of Health issued an Order making it easier for people to obtain exemption from vaccination. (Labour cheers.) Dr. Watts asked whether each of these cases cost the local authority £250 for treatment, isolation, disinfection, and so forth; and whether the Minister's attention had been drawn to the report of a medical officer of health that in his area the money spent on these cases could have built 1,000 or 1,500 houses. Mr. N. McLean asked if the Government would issue orders to the local authorities to extend the building of houses and the clearing of sites, and to take steps to eliminate this disease by means of fresh air and pure food and not by vaccination.

Sir Victor Warrender asked whether the incidence of the disease had increased since the coming into effect of the present regulations affecting exemption from vaccination.

Sir Kingsley Wood presumed that Sir Victor Warrender referred to the Order issued by the late Minister of Health, which had the effect of reversing an Order issued by Mr Neville Chamberlain on July 20th, 1923, and of reinserting the form of statutory declaration of conscientious objection in the notice of the requirement of vaccination handed to the parent or guardian when the birth of a child was registered. The Order of the late Minister came into force on October 1st last, and Mr. Chamberlain was watching its effect, but there was not yet sufficient evidence to enable him to form a final opinion on it.

Dr. Watts asked how Sir Kingsley Wood explained the fact that, despite the number of cases of small-pox, proceedings were rarely, if ever, instituted under the present Vaccination Act. Sir Kingsley Wood asked for notice of that question. Dr. Fremantle asked whether the Government was considering the transference of these powers from the boards of guardians to the sanitary authorities, so that they might be worked out in common with the general upkeep of the public health. No reply was given to this question.

Vaccination as Condition of Employment.—Mr. Clowes asked the Minister of Labour, on May 4th, whether he was aware that at the Burslem employment exchange there had been posted up, at the instance of Messrs. Brunner, Mond and Co., an application for bricklayers between the ages of 26 and 40, who must be willing to be vaccinated, or had recently been vaccinated; whether it was in accordance with regular practice for applications of this nature to be posted at employment exchanges; and whether an unemployed bricklayer who refused an offer of employment under such conditions would be disqualified for benefit. Mr. Betterton (Parliamentary Secretary to the Ministry of Labour) replied that he had not yet completed his inquiries into this case. It was the ordinary practice to post up in the exchange notices of vacancies which could not be immediately filled from the registers. The question whether benefit would be disallowed on refusal of vacancies of this kind would be determined by the usual statutory machinery.

School Children and Infection.—Colonel Day asked the Minister of Health, on May 5th, if he would consider the introduction of legislation to prevent persons in control of children, as, for example, headmasters and managers of schools, from permitting them when in an infectious condition to enter public vehicles or go into public places at the risk of spreading infection. Sir Kingsley Wood said provision was already made in Section 126 of the Public Health Act, 1875, for preventing the exposure, without proper precautions, in public places and public conveyances of children suffering from any dangerous infectious disorder. Similar provisions as regards London were contained in Sections 68 and 70 of the Public Health (London) Act, 1891, and there were numerous supplementary provisions on this subject contained in local Acts. The question of introducing further legislation dealing generally with the matter would be considered in connexion with the proposed amendment of the Public Health Acts.

Cost of Child Welfare and Maternity Clinics.—Mr. Lansbury asked the Minister of Health, on May 5th, the amount of public money spent by local authorities during the years ending March, 1913, and March, 1925, on child welfare clinics and other centres, and on the supply of milk to nursing and expectant mothers during the same period, showing the sum raised from the rates and that paid from the National Exchequer. Sir Kingsley Wood, in reply, said no figures were available as regards maternity and child welfare services in respect of the year ended March, 1913, the year ended March 31st, 1915, being the first in respect of which an Exchequer grant was paid on these services. The total net expenditure of local authorities in England and Wales on all maternity and child welfare services in that year was (approximately) £66,700, and of voluntary agencies receiving the Exchequer grant (approximately) £16,200. No separate figures on the expenditure of local authorities on maternity and child welfare centres and clinics, or on the supply of milk to nursing and expectant mothers and children, were available prior to the year ended March, 1920. For that year the net expenditure was: maternity and child welfare centres and clinics, £132,379 (exclusive of the cost of medical supervision and services of health visitors, which could not be given separately in respect of this item); supply of milk and food to nursing and expectant mothers and children, £163,648. The net expenditure on centres and clinics provided by voluntary agencies receiving Exchequer grants in that year was approximately £102,000. Particulars of the actual expenditure on these services for the year ended March, 1925, were not yet available, but the net expenditure for the year ended March, 1924, was: maternity and child welfare centres and clinics, £134,340 (exclusive of medical supervision and health visitors services); supply of milk and food to nursing and expectant mothers and to children, £200,100; centres and clinics provided by voluntary agencies receiving Exchequer grant (approximately), £105,100. One-half of this expenditure was met by way of Exchequer grant, and one-half of the net expenditure of local authorities was met out of the rates.

Dried Milk.—Mr. Groves (Stratford) asked whether the reduction in the infantile death rate in West Ham had not proceeded side by side with the increased supply of dried milk and the general development of the borough health services; and whether the Ministry of Health would recommend the local authorities of the country to use dried milk in preference to liquid milk. The Parliamentary Secretary to the Ministry of Health replied that the reduction in the infantile mortality of West Ham was comparable to that in other areas and could not be attributed exclusively to any particular measures made in the West Ham area. The Ministry was not prepared to make the recommendation suggested.

Necropsies in Criminal Cases.—Mr. A. R. Kennedy asked the Home Secretary, on May 4th, if he were aware of the disadvantage which might attach to a person accused of murder or manslaughter in the conduct of his defence from the practice of appointing one medical man only to conduct a *post-mortem* examination, and whether he would take the necessary steps to ensure that, where a person had died in circumstances which might lead to a criminal charge against another, and a *post-mortem* examination was held, a duly qualified medical practitioner should be appointed to watch the examination in the interests of the person, if any, thereafter to be charged. The Under Secretary for Home Affairs replied that the Home Secretary did not see his way to propose legislation for this purpose. A *post-mortem* examination was not a matter of advocacy but of scientific investigation. The Director of Public Prosecutions was, however, considering whether it might not be possible to arrange that the defence should have the opportunity of appointing a medical man to be present on behalf of the defendant when the *post-mortem* examination was performed.

Pensions.—The Minister of Pensions has made the following replies to various questions: (1) Where an applicant's appeal had been rejected or a final appeal had been confirmed the decision was final, but if fresh evidence was subsequently produced which clearly showed that the disability or death was due to war service, an award was made. In cases of final award where, in the course of medical treatment and observation by the Ministry, it was clearly demonstrated to the Ministry that the award had been wrongly declared final owing to error of diagnosis or prognosis involving a serious underestimate of the degree of permanent disablement, the award was reviewed and a further grant made. (2) Steps have recently been taken to secure that the speediest decision possible is reached in cases outstanding before medical boards. The decisions are conveyed to claimants as quickly as possible, and cases were as a whole decided far more rapidly than a short time ago. (3) That during the year ended March 31st, 1925, about 50,000 fresh claims were decided by the Pensions Ministry, and some 17,700 awards were made, of which 11,500 were to persons not previously in receipt of pensions. The Pensions Appeal Tribunals heard 46,570 appeals in the same time, and disallowed 24,500. At March 31st the beneficiaries under the Pensions Acts numbered 2,037,000, compared with 3,366,000 in March, 1921.

Lead Paint Bill.—The Lead Paint (Protection against Poisoning) Bill, to make better provision for the protection against lead poisoning of persons employed in painting buildings, was introduced into the House of Commons by the Home Secretary on May 1st, and was read a first time.

The Indian Services.—Earl Winterton, Under Secretary for India, stated, on May 4th, that the recommendations of the Lee Commission Report on pay and passage have been extended to members of the fifteen central services, which it had been decided to regard as superior, in precisely the same way as they had been given to members of the All-India services, other than the Indian Civil Service. Eligibility for these concessions depended upon an officer having a non-Asiatic domicile. The pension concessions had also been given to thirteen of these fifteen services.

Notes in Brief.

The additional excise duties on proprietary medicines which were imposed by the Finance Act of 1915 have been continued as part of the new Budget, by resolution of the House of Commons under the Provisional Collection of Taxes Act.

The number of accidents during 1924 caused by passengers falling out of moving railway carriages was 75. Of these, 30 were fatal.

The Advisory Committee on Opium Traffic, which advises the Council of the League of Nations on the supervision of the traffic, will meet some time before September. It is not proposed to lay before Parliament at this stage the protocol drawn up by the recent Opium Conference at Geneva.

The Ministry of Health is unable to say when the report of the Royal Commission on National Health Insurance will be presented to Parliament.

Correspondence.

THE DECLINE OF LITHOLAPAXY.

SIR,—Major-General A. Hooton's interesting paper on the decline of litholapaxy (BRITISH MEDICAL JOURNAL, April 11th, p. 690) prompted us to look up the statistics of cases of stone admitted into St. Peter's Hospital, London. We find that out of 371 consecutive cases of vesical calculus recently admitted to the wards, litholapaxy was performed on 226, suprapubic lithotomy on 144, and perineal lithotomy on one.

At first sight these figures appear to confirm the impression that the operation of litholapaxy is declining in frequency, but further investigation shows that this is not the case. We found that in 79 of the 144 cases on which suprapubic lithotomy was performed some form of prostatic obstruction was also present, which necessitated an open operation. Sixty-nine of these cases were simple senile enlargement, but 5 were complicated by the presence of vesical diverticulum and 2 by urethral stricture. Five of the remaining 10 cases were prostatic calculi, for which the gland was removed, 4 were cases of obstruction recurring after prostatectomy, while the last case was one of obstruction caused by a prostatic bar. There were also 14 cases in which litholapaxy was contraindicated by reason of some vesical condition. These were diverticulum (9 cases), diverticulum carcinoma (2 cases), vesical carcinoma, recto-vesical fistula resulting from a rectal carcinoma, and prolapse of the ureter. One case was associated with an impassable stricture of the urethra. This leaves 50 cases to be accounted for. In 8 of these the stone was too large to be crushed, 3 were vesico-urethral calculi, one stone was adherent to the bladder wall, one formed round a drainage tube left in the bladder after a previous operation, and one was found

on opening the bladder to deviate the urine prior to an operation for hypospadias. There were 4 cases in which litholapaxy failed. In one of these the stone was composed of fibrin covered by a thin layer of phosphates; in another the patient was suffering from advanced tabes, and, although the stone was easily crushed, the fragments could not be evacuated. The bladder was opened, and it was found that they had slipped through the relaxed sphincter vesicae into the posterior urethra. In the remaining 2 cases the cause of the failure was not mentioned. In 31 cases no definite reason was given in the notes why lithotomy was performed instead of litholapaxy, but in all these cases foul cystitis was present, and it is probable that the bladder was opened in order to relieve the infection.

The one case of perineal lithotomy was of interest. The patient had stones in both kidneys, in the right ureter, in the bladder, and in the urethra. As the urethral calculi could not be displaced back into the bladder, external urethrotomy was performed, and the bladder stones were removed at the same time through the urethral incision.

From these figures it will be seen that litholapaxy is still considered the operation of choice for uncomplicated vesical calculus, and that the surgical staff of the hospital only resort to lithotomy when there is a definite contraindication to the crushing operation. In one sense only has the operation declined. Before the introduction of prostatectomy, litholapaxy was considered to be the correct treatment of stone complicating prostatic obstruction. The results in these cases were very bad, as it was practically impossible to evacuate fragments which had fallen into the post-prostatic pouch, and recurrence was the rule and not the exception. No recurrence due to imperfect evacuation of the fragments has been noted in the present series of 225 operations, and the mortality is only 2.2 per cent., so that the end-results are eminently satisfactory.—We are, etc.,

J. SWIFT JOLY.
J. ALBAN ANDREWS.

London, W.1, May 4th.

THE EFFECT OF ANTISYPHILITIC TREATMENT AS GAUGED BY THE SIGMA REACTION.

SIR,—Table I in the paper on this subject by Dr. P. H. Jones, which appears in the JOURNAL of May 2nd (p. 821), conveys an impression of the Wassermann and Sigma results obtained by one of us (E. J. W.) which is entirely erroneous. Under the columns headed "Controls" appear 14 Wassermann and 20 Sigma positive reactions. The 20 Sigma reactions are qualified by a note to the effect that 11 of these cases were later diagnosed as syphilis, leaving the impression that the Wassermann test gave 14 non-specific reactions and the Sigma 9. Reference to the report from which Dr. Jones quoted[1] will show that, of the 14 results classed by him as positive, 5 were doubtful reactions, which we are always careful to say should never be regarded as positive in unknown cases. The remaining 9 cases gave positive reactions also to the Sigma, Sachs-Georgi, and Meinicke tests, and, incidentally, positive Wassermann reactions in another laboratory. The reactions were strong ones and indicate that, although counted under "controls" (since no clinical signs or history of syphilis had been discovered at the time of reporting), they were in fact syphilitic.

Of the 20 Sigma results, 3 were reported as doubtful and should not be classed as positive, and 9 have been explained above. As to the remainder, we may not trespass so much on your space as would be necessary to explain them in detail, and must content ourselves with referring to the report made to the Copenhagen Conference in November to December, 1923.[2] In this we mentioned that further investigation had made it necessary to revise some of the diagnoses shown in the first report (from which Dr. Jones has quoted), with the result that, in a total of 2,240 serums (1,701 syphilitic and 539 probably non-syphilitic) which had been tested up to the time of the Conference, the Wassermann test had afforded us no non-specific results and the Sigma only one, a reaction of 1.6 units. At the Technical Laboratory Conference in Copenhagen, to the report on which we have referred, eight serums described as "controls" were found by those of the eight representatives of European laboratories who tested them to be positive by the Wassermann, Sachs-Georgi, Sigma, Meinicke III, and Meinicke Trübungs methods, showing that they were in fact syphilitic. With these exceptions, neither the Wassermann nor the Sigma test gave, in our hands, a positive reaction in a control case.—We are, etc.,

L. W. HARRISON.
E. J. WYLER.

St. Thomas's Hospital, May 2nd.

[1] League of Nations Health Organization, Reports on Serological Investigations to the Second International Conference, Paris, 1922
[2] League of Nations Health Organization, Report of the Technical Laboratory Conference held at Copenhagen, November 19th to December 3rd, 1923.

DERMATITIS FOLLOWING ULTRA-VIOLET LIGHT.

SIR,—While Mr. W. E. Schall (April 25th, p. 806) is correct in his comparison of the physical properties of sunlight and radiation from the mercury vapour lamp, I would like to point out that he is not correct in his conclusion as to the clinical effect of the mercury vapour lamp.

The shorter wave ultra-violet rays which this lamp produces—that is to say, rays of a wave-length between 3,000 and 2,000 A.U.—should give a slight erythema (when a properly regulated dose is given) at first, but after a few treatments the skin becomes tolerant and is not inflamed by these rays. I have not been able to detect any harm from their use, and their presence in the radiation of the mercury vapour lamp is, in my opinion, no reason why it should not be used. I find that in skilled hands the mercury vapour lamp, used in conjunction with other lamps to produce the longer rays, gives far better results when used for the general irradiation of the normal skin than the open carbon arc lamp, and never produces chronic dermatitis.

The case described by Drs. MacCormac and Moreland McCrea, in which an old gentleman went to sleep under the mercury vapour lamp with which he was treating himself, can surely have no bearing on the question at all, because you might as well say that one should never have a hot bath because someone had once fallen into a boiler.—I am, etc.,

G. MURRAY LEVICK.

London, W.1, May 3rd.

SIR,—In your issue of April 25th (p. 806) Mr. Schall, B.Sc., points to the use of the mercury vapour lamp, with its intenser radiation of ultra-violet rays in the region of 300 to 200 $\mu\mu$, as having caused the severe attack of dermatitis recently reported in your columns. Mr. Schall advocates the use of a carbon arc lamp as a superior instrument for general irradiation because its spectrum more closely resembles that of the sun, and he would reserve the mercury vapour lamp for the treatment of cases of a more definitely surgical nature.

I hold no brief for the mercury vapour lamp, and use both it and the carbon arc, but the experience of several years of ultra-violet and light therapy has brought me to just the opposite conclusion to Mr. Schall. First of all, no one dreams of employing the mercury vapour lamp alone except perhaps in certain cases of dermatitis. In all general irradiation its cold ultra-violet rays must be supplemented by the longer infra-red and red rays of a lamp of the Sollux or some other type of thermic lamp. This, in my opinion, is more efficiently done by the combination of two lamps, which makes it possible to modify and adapt treatment to individual cases much better than is possible when both ultra-violet and thermic rays come from one unvarying source.

It is this adaptability and variety that makes the mercury vapour lamp such a valuable instrument in general irradiation. By increasing or decreasing the distance of one or other lamp the intensity of actinic and thermic rays can be altered, while by the skilful use of "ulviol" filters the shortest ultra-violet rays can be excluded altogether if necessary, and the patient can very quickly be brought up to the ideal maximum (half an hour's unfiltered quartz light daily) without fear of too strong reaction, and this with a very small expenditure of current. The carbon arc, on the other hand, requires a very large amount of current, and general treatments are very much longer.

Its use is therefore much more expensive, and it has minor drawbacks, such as flickering and sputtering, the handling of dirty carbons, and the fact that the air of the room is soon vitiated by fumes of nitrous oxide and carbon dioxide.

But in the treatment of local conditions, particularly in surgical tuberculosis and lupus, it is far superior to the mercury vapour lamp, which is only effective in superficial forms of lupus. In chronic cases with deep indurations and infiltrations we need the greater penetration of the carbon arc to get the results which Doutrelepont has so well described as

"an inflammatory process involving the whole of the cutis with serous and fibrinous exudate from the dilated vessels and migration of leucocytes to surround and penetrate the tuberculous foci. A further stage is the vacuolar degeneration of the cellular elements of the tubercle and their ultimate replacement by spindle cells. Thus the lupus scar is formed."

—I am, etc.,

JUSTINA WILSON, M.R.C.P.Edin.,
D.M.R. and E.Camb.,
Physician in Charge of Electro-therapeutic Department,
St. Mary's Hospital, London.

April 29th.

THE IMMEDIATE AND REMOTE EFFECTS OF SUNLIGHT.

SIR,—Supplementing the note of warning by Sir Lenthal Cheatle and Dr. Heald (JOURNAL, March 28th, p. 631, and April 11th, p. 717) I would like to add a further note of warning—namely, that a method of treatment apparently so valuable should not be discarded as a remedial agent for lung tuberculosis before it has been fully and fairly tried.

This treatment has been in use at Stannington Children's Sanatorium for the last five years. Both medical and surgical cases have been dealt with. The tungsten arc lamp was installed in 1919, and the mercury vapour lamp (Hanau "mountain sun lamp") in August last. With regard to the surgical cases, our surgeon, Mr. H. M. Johnston, has had results as encouraging as those obtained by other workers who have recorded their experiences in the medical literature, although the results reported so optimistically in the lay press have not been obtained here.

With the medical cases we have naturally proceeded with the utmost caution, and although we have not attained the striking results recorded in surgical cases we have been emboldened to go on. Only in one instance do we suspect that the treatment may have done harm. This was a very chronic and severe case, in a girl aged 16 years, who was obviously going downhill. Realizing, however, that tuberculous patients may get a recrudescence, sunlight or no, we resumed treatment when the acute symptoms had to some extent abated, and carefully increased the dose. The results now have certainly been beneficial.

Reference was also made to Sir Henry Gauvain's opinion, that there is no definite correlation between bronzing of the skin and satisfactory clinical results. As one who has the pleasantest recollections of Sir Henry's discourse on heliotherapy, I must, however, beg leave to differ from him on this matter. Of natural sunshine, I have of necessity, in the North, no useful experience. Summer sunshine is so limited that it is impossible to acclimatize the patients to it gradually, and evil from overdosage is just as likely to accrue as good. I have however had, at Davos Platz, considerable experience through several winters of the effects of direct sunlight on lung cases, and while I agree that bronzing *per se* is no criterion, the quality of the bronzing is a very distinct indication of the prognosis of the case. A patient who is doing well maintains a pleasing, sometimes ruddy glow, while a retrogressive case will exhibit a sickly, yellowish, even jaundiced hue, or else no coloration at all. This distinction is patent to a layman.

In conclusion, while my treatment has been only tentative, I have had cases which have encouraged me to continue, but if this treatment is to go on—and there are signs that there will be lavish expenditure all over the country—I would urge that suitable light, airy, roomy buildings should be erected, as it is obvious that for both surgical and medical cases, but especially the latter, more harm than good will accrue from the huddling together of numerous patients in a confined space, polluted by human emanations.—I am, etc.,

T. C. HUNTER, M.D.,
Medical Superintendent,
Stannington Sanatorium.

Morpeth, Northumberland,
May 2nd.

Dr. R. KING BROWN (M.O.H. Bermondsey), after reading Sir G. Lenthal Cheatle's letter, forwarded a copy to Dr. Axel Reyn, chief physician at the Finsen Light Institute, Copenhagen, who has written the following note for publication:

I have read with the greatest interest Sir G. Lenthal Cheatle's letter in the BRITISH MEDICAL JOURNAL of March 28th, in which he states that, with Dr. Arthur Whitfield, he has examined skin that had been "bronzed" by therapeutical exposure to sunlight and has found mitosis occurring in the epithelial cells situated above the basal layer, from which he seems to conclude that with the use of sunlight—or artificial irradiation—there may be connected a risk of inducing epithelioma. It is true that atrophic changes are sometimes observed in the skin of persons whose hands and face are habitually exposed to strong light and air, and that in such cases epithelioma is sometimes seen to develop there. But up to the present nothing has been brought forward to prove that it is the light, particularly, that produces these changes. From all indications they are due fully as much—or chiefly, rather—to such other influences as wind and rain and all the various assaults to which the constantly uncovered and unprotected skin of these persons is daily exposed. Do we not see epitheliomata of the skin develop in almost any site exposed to constant mechanical influences? We need only think of cancer of the lips, chimney-sweep's cancer, tar cancer, and many others. That the therapeutical application of light should produce epithelioma is in the highest degree unlikely. Nothing argues more strongly against this suggestion than the fact that up to this day no case of cancer of the skin has been reported as caused by the light bath, among the hundreds of thousands of persons who take either sun or artificial baths of this kind. And I may state, further, that among the thousands of patients who have received local phototherapeutic treatment for lupus at the Finsen Institute, we have not observed one case of lupus carcinoma resulting from this treatment. On the contrary, the percentage of lupus carcinoma shown by our records is the lowest existing, a fact which must be ascribed exclusively to the phototherapeutic treatment, which cures the patients so that they do not get carcinoma, while, if the light were particularly provocative in this respect, we should, of course, see a great many cases of this complication.

Of the fact that the phototherapeutic treatment does not produce epithelioma I see another proof in the conclusions arrived at by Dr. K. A. Heiberg, the histologist of the Finsen Institute, as the result of microscopical examinations made of the skin of twenty-five patients who had been under treatment with carbon arc light baths for a considerable period. Not in one single instance did Dr. Heiberg observe any change involving a risk of epithelioma; on the contrary, he proved that there takes place a vigorous regeneration of healthy skin, which greatly assists in improving the functioning of the latter. I therefore urgently recommend the use of light baths—sunlight or artificial—in all diseases for which this treatment is suitable. It is a therapy which has already proved so rich in beneficial results that it should be used, also in the future, to an ever-increasing extent; and we certainly must not allow ourselves to become frightened at dangers that are non-existent.

Dr. R. King Brown wrote also to Dr. Rollier of Leysin, who replied to somewhat the same effect.

Dr. Rollier considers that to obtain complete and well balanced therapeutic action a complex of rays should be used, the proportion of which is given by the solar light. They produce an increase of all vital phenomena in the skin, and it is therefore not extraordinary that the generative layers of epidermis should present more numerous mitoses. Dr. Rollier has never seen cutaneous atrophy follow phototherapy properly applied. The violet and ultra-violet rays used alone have an irritative action on the skin; nevertheless the most acute reactions, even those due to abiotic ultra-violet rays, get well if the irritation is not maintained by other traumatisms. He has never seen cutaneous epithelioma occur in a case of lupus treated only by heliotherapy. In Dr. Rollier's opinion heliotherapy—and he assumes that this applies also to artificial heliotherapy—does not cause any damage when it is applied in a rational manner, but the question of dose plays an important part.

SLOW HEART.

SIR,—My old friend Dr. Rickard Lloyd's letter (May 2nd, p. 860) brings to memory a very remarkable case I had to deal with many years ago. An elderly man was to be operated on for obstructed inguinal hernia. Sir Rickman Godlee, who was the surgeon, told me that the patient's pulse was abnormally slow, and that under chloroform it would become slower, as it had done when he was operated on for a similar condition some time previously. Sure enough, before operation the pulse was 25 to 28; when fully under it dropped to 12 to 15 a minute. His breathing remained slow but regular all the time, but it was a rather trying experience to count five to six full seconds for each

beat. I went on the old rule, "Watch the breathing and keep the airway open," and all went well. The case was a remarkable one, as the patient had a double hernia with practically all his bowels in his scrotum. The patient recovered, but died some little time after from another trouble.—I am, etc.,

Appledore, Kent, May 2nd. F. WILLIAM COCK.

APPENDICITIS.

SIR,—I was much interested in Mr. Sherren's article on the symptoms of appendicitis, in the BRITISH MEDICAL JOURNAL of April 18th (p. 727). I should be grateful if he or some other surgeon or pathologist would solve a mystery that has been puzzling me for years—that is, What is the cause of the *suddenness* of the pain which usually ushers in appendicitis—what pathological or mechanical change occurs at the moment of onset? Is it obstruction and distension of the appendicular tube? If so, is an appendicitis which is characterized by a more gradual onset of a different type, and likely to take a different course, from one commencing suddenly?

An interpretation of the symptoms in appendicitis by those who have the opportunity would enable us general practitioners to read our cases with a more intelligent interest, and consequently diagnose them more accurately and earlier.—I am, etc.,

Croydon, April 28th. T. A. BLACK, M.B.

INDIVIDUAL MEDICAL DEFENCE.

SIR,—The recurring suggestion that the British Medical Association should undertake individual medical defence has now, apparently, received the qualified support of the Council, and will appear before the Representative Meeting in rather a new form.

What the Representative Body will do will be interesting to watch, as the present suggested policy is diametrically opposed to previous decisions of the Representative Body. I think it is a fact that at Edinburgh in 1898 it was definitely decided that the British Medical Association should not undertake medical defence; and again, at Leicester in 1905, a resolution was carried that it was inadvisable for the Association to undertake medical defence in competition with the existing societies. Other Annual Representative Meetings have also turned down similar suggestions. Apart from this, however, let us examine the suggestion on its merits.

The Medical Defence Union (of which society I know most) has as its General Secretary an ex-Deputy Medical Secretary of the British Medical Association, and on the Council are the present Honorary Librarian, one member of the Council of the British Medical Association, and a past Chairman of the Representative Body. Other members of the Council of the Medical Defence Union are also members of the British Medical Association. Surely the British Medical Association could hardly hope for any committee or governing body, even if entirely nominated by itself, to have more regard for members of the British Medical Association.

Again, the accumulated funds of the existing defence societies form a protection to members that no new society could hope to give for many years to come. It would even be possible that heavy claims in the first year or so might break a society which embraces only some 6,000 to 7,000 members.

Another point. The position of the individual who resigns from one of the existing societies to join the new one would be somewhat precarious. On his resignation he forfeits all protection for any matter occurring prior to his resignation. A new society is not likely to give retrospective protection; it could not possibly afford to do so. Thus there would be an interregnum, during which the individual would be totally unprotected.

I am a keen supporter of the British Medical Association, and have done a good deal of work for it at one time and another; but I should be very sorry to see it embark upon this fresh scheme for many reasons, a few of which I have mentioned above.—I am, etc.,

Birmingham, April 25th. W. TRACY LYDALL.

SIR,—In your issue of May 2nd (p. 861) Dr. Manson refers to the early history of the medical defence question, both within and without the British Medical Association.

Thanks to the researches of the Association's Intelligence Officer, I am able to give some of the details for the benefit of those who are interested.

On February 13th, 1886, it is recorded that the following resolution was unanimously passed by the Essex district of the East Anglian Branch:

> "That as medical men may at any time become liable to false and groundless charges of a ruinous nature, it is most desirable that a medical defence fund be formed and administered in connexion with the British Medical Association, and that its members should be asked to contribute a small sum annually to this fund, those who do so becoming entitled, if occasion arise, to legal advice and assistance."

It was in the same year (1886) that the Medical Defence Union was formed as the result of a meeting held in May at the Medical Institute at Birmingham.

It would appear, however, that considerable discussion must have taken place within the Association for at least ten years previous to 1886, as Mr. George Brown, speaking to a resolution moved by Dr. Arthur Welsford at the Annual Meeting in London in 1895, stated "that he had wrestled with the Council for twenty years on this subject."—I am, etc.,

S. MORTON MACKENZIE,
Chairman, Organization Committee,
Dorking, May 2nd. British Medical Association.

SIR,—Dr. Manson's reply to my letter on this subject discloses a number of misapprehensions, and I ask leave to make my argument clearer to him than my previous letter appears to have done.

He attributes to me the view that what would have been right in 1880 is wrong in 1925. What I said was that a certain course which would have been expedient in the circumstances of 1880 is not expedient in those of 1925, and I went into details of the changed circumstances.

I urged the overwhelming importance of a large reserve fund to a medical defence society; and pointed out that the Medical Defence Union and the London and Counties Medical Protection Society have such reserves, whereas the new company which it is suggested should be started under the auspices of the British Medical Association will have none. Dr. Manson glozes over this issue, and replies that the existence of these reserves proves how profitable is the work of medical defence, and how probable it is that in time the new company will also possess a reserve. It has taken the Defence Union forty years, and the Protection Society thirty-three years, to accumulate their respective reserves; and both societies in their early years risked bankruptcy in the process. The risk had to be run because it was the only way by which medical and dental practitioners could get individual medical defence. The risk still confronts any new society, and is definitely greater than it was forty years ago. Then why start a company which has to run such a risk when the existing societies have got beyond it? And which society is likely first to be able to reduce subscription rates—that which has a reserve of thousands of pounds, or that which may with luck hope to have an equal amount in forty years' time?

I disagree with Dr. Manson's thesis that a number of societies (necessarily weak ones, of course) are preferable to two strong ones. Personally I hold that one exceedingly powerful society would be even better. He puts forward in mitigation of the argument of the wastefulness of multiple offices, secretaries, and overhead charges in general, that no doubt the British Medical Association would let the new company have cheap office accommodation in the new buildings. Does Dr. Manson not perceive that this merely shifts on to the Association part of the burden in question, and that my argument that these multiple overhead charges come out of the pockets of the medical profession is unanswered?

I hope to see Dr. Manson withdraw unreservedly the paragraph in which he speaks of the relations between the Medical Defence Union and the Yorkshire Insurance Company, because upon reflection he will realize that the words he has used are bound to create a wrong impression and

to mislead. I demur also to his belief that "very little is happening in the defence societies," which is the inference he draws from my statement (not disputed by him) that there is extraordinarily little dissatisfaction among the members of the two defence societies. His inference is not only illogical, it is also incorrect.

One last point. Dr. Manson asks whether the Medical Defence Union would prosecute a member of the Union before the General Medical Council for a grave professional offence. It is *ultra vires* for the Medical Defence Union to do such a thing, and it will be equally *ultra vires* for the new company that Dr. Manson wants to see started to act similarly to a member of that company. This is a question of law; thus the aspirations expressed in his last paragraph are unattainable, because the law prevents their realization.—I am, etc.,

London, S.W., May 3rd. HENRY ROBINSON.

SIR,—I read Dr. Manson's criticism of Dr. Robinson with much interest till I reached the last paragraph; then I rubbed my eyes. He desires to know if a medical defence society "would prosecute a member before the General Medical Council for advertising, touting, or other grave professional offence." He intimates not. There is a case for the British Medical Association undertaking the responsibility of a defence society, and against. But Dr. Manson's naïve query, I hazard, settles it. The idea of the British Medical Association prosecuting its own members is too entrancing.

Medical ethics, medical amenities, comprise a curious world, in a jealous profession. Sir William Osler often plaintively refers to it in his writings, and the best antidote, as he always maintained, is a liberal education. The British Medical Association is constituted on a broad, democratic basis, I take it, for medical politics. The addition of the function could but weaken it.—I am, etc.,

London, N.W., May 3rd. RICHARD GILLBARD.

HARVEY MEMORIAL AT HEMPSTEAD.

SIR,—By this time all members of the Association (and practitioners who are not) have doubtless received the circular from the Harvey Church Tower Memorial Fund Committee, appealing for monetary aid to erect a fabric to be named after the great William Harvey, and to restore to its pristine beauty the interesting old church at Hempstead, Essex, in which he (and many members of the Harvey family) was buried. I intended, in the first instance, to ask a few of my immediate medical colleagues to join with me in making at least some response to the appeal. But on reflection it seemed that a move in the same direction by the Association through the JOURNAL would be more appropriate and infinitely more effective.

The small subscription of half a crown from every British practitioner would, it appears, be sufficient to finance the project. There are two reasons why all should respond—first, because an old fourteenth century church requires restoration, and, again, the great and momentous discovery of a fellow countryman and physician is to be suitably recorded in stone.—I am, etc.,

London, N.W., May 1st. HOPE GRANT, F.R.C.S., etc.

*** A note on the subject of Mr. Hope Grant's letter appears elsewhere, at page 895.

The Services.

OSBORNE CONVALESCENT HOME.

THE KING has approved of the reappointment of the following to the consulting staff of King Edward VII's Convalescent Home at Osborne, Isle of Wight, for officers of H.M. Navy, Army, and Air Force: Sir Cuthbert Wallace, K.C.M.G., C.B., F.R.C.S., Sir Herbert Waterhouse, M.D., F.R.C.S., G. E. Gask, C.M.G., D.S.O., F.R.C.S., Sir W. H. Willcox, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P., C. H. Miller, C.B.E., M.D., F.R.C.P., H. S. French, C.B.E., M.D., F.R.C.P., H. Morley Fletcher, M.D., F.R.C.P.

TERRITORIAL DECORATION.

THE KING has conferred the Territorial Decoration upon the following medical officers: Colonel Frank G. Proudfoot, M.D. *Royal Army Medical Corps:* Lieut.-Colonels R. M. Vick, O.B.E., Sir Ewen J. Maclean (ret.), Major R. Coffey, E. J. Boorne, D. S. Sutherland, A. E. Webb-Johnson, C.B.E., D.S.O.

INDIAN MEDICAL SERVICE.

As already announced, the annual dinner of the Indian Medical Service in London will be held at the Trocadero on Wednesday, June 17th. Lieut.-Colonel A. W. Alcock, C.I.E., F.R.S., will be in the chair. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S.(ret.), 18, Nevern Mansions, Warwick Road, S.W.5.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on April 30th the degrees of M.A. and D.M. were conferred on H. D. Haldin-Davies.

UNIVERSITY OF SHEFFIELD.

DR. B. BROUWER, professor in the University of Amsterdam, will give a lecture (in English) entitled "The projection of the retina in the brain," on Tuesday, May 19th, at 8.45 p.m., in the Medical Library, the University of Sheffield. All medical practitioners are invited.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the first summer commencements, held on April 28th, the undermentioned degrees were among those conferred:

M.D.—J. C. J. Callanan, R. A. D. Pope.
Sc.D.—J. W. Bigger, M.D.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary comitia of the College was held on April 30th, the chair being occupied by the President, Sir Humphry Rolleston.

Fellowship.

The following were elected to the Fellowship:

Robert Fortescue Fox, M.D.Lond. (London), Athelstane Iliff Simey, M.D.Camb. (Rugby), Ivor Jones Davies, M.D.Lond. (Cardiff), John Davis Barris, M.B.Camb. (London), Henry Harold Scott, M.D.Lond. (London), Joseph Godwin Greenfield, M.D.Edin. (London), George Riddoch, M.D.Aberd. (London), Alfred Bertram Soltau, C.M.G., C.B.E., M.D.Lond. (Plymouth), William John Adie, M.B.Edin. (London), Frederick George Chandler, M.D.Camb. (London), John William MacNee, D.S.O., M.D.Glasg. (London), Bernard John Hart, M.D.Lond. (London).

Membership.

The following candidates, having passed the required examination, were admitted Members:

Frederick M. B. Allen, M.D.Belf., Herbert A. Brookes, M.B.Edin., Morris J. Cohen, M.D.Liverp., Leslie B. Cole, M.B.Camb., Robert H. Cooke, M.B.Lond., Macdonald Critchley, M.D.Bristol, John N. Cruickshank, M.D.Glasg., Charles F. Harris, M.B.Lond., Amy Hodgson, M.D.Liverp., William A. Lister, M.R.C.S., L.R.C.P., Arthur S. MacNalty, M.D.Oxf., David C. Muir, M.B.Lond., Robert Platt, M.D.Shef., Thomas D. Power, M.D.Dub., D'Arcy J. Prendergast, M.B.Toronto, Jeffrey Ramsay, M.D.Lond., Chennagiri K. Rau, M.D.Madras, and Ambrose Spong, M.D.Manch.

Licence.

Licences to practise physic were granted to the following 138 candidates, who have passed the Final Examination of the Conjoint Board and have complied with the by-laws of the College:

C. S. Anderson, W. A. Barnes, St.C. E. J. Barrett, I. C. P. Beauchamp, J. R. Beagley, Diana J. K. Beck, P. R. T. Becker, Elizabeth E. Benson, C. P. Blacker, W. R. Bonner-Morgan, E. H. Boodrie, D. de C. Boxhill, P. G. Brain, M. K. Braybrooke, R. B. Brew, C. W. Brook, G. M. Brooks, M. F. Butler, L. I. M. Castleden, Enid A. Ceiriog-Cadle, M. Chandra, R. J. K. Chattey, J. E. Church, Hilda A. Cohen, Jean Cooper, Catherine A. Cowan, P. V. Crameri, D. P. Crawford, D. A. L. Crawshaw, Victoria M. Crosse, G. P. Crowden, J. Crowther, J. Cumming, R. N. Curnow, R. R. Dalling, H. E. Daniel, R. K. Debenham, A. E. De Chazal, J. D. Dillon, W. H. A. Dodd, A. S. M. Douglas, J. L. C. Doyle, G. I. Evans, P. F. Evans, Christabel S. Eyre, C. R. Fielding, F. J. T. Foenander, C. A. Francis, D. B. Fraser, H. E. Gamlen, A. W. Gardner, J. H. Gibbens, G. D. Gillbard, A. Gompertz, R. T. Goodyear, D. R. Grant, G. S. Hale, S. Harris, J. H. Hartland, F. C. Haward, Marjorie F. M. Hayward, H. L. Heath, Catherine M. Hext, H. F. Hiscocks, F. D. M. Hocking, R. G. Hodder, H. B. Howell, J. E. Howie, W. Hughes, J. T. Hunter, J. S. Jacobsz, M. E. M. Jago, L. E. Jones, L. R. Jones, W. H. M. Jones, B. Kaplansky, P. N. Kapur, R. St.J. Kemm, G. M. King, J. G. Kingsbury, C. K. Lakshmanan, J. C. C. Langford, Kathleen M. Lankester, G. A. Q. Lennane, H. M. O. Lester, Muriel A. Lester, T. J. Lloyd, A. McMillan, S. P. Meacock, J. G. Milner, V. S. Mitcheson, S. K. Montgomery, A. J. Moody, C. A. Moody, Florence I. R. Moore, W. G. R. Morris, C. A. Mulligan, Marjorie Murrell, W. Ogden, J. B. Oldham, Dorothy M. Payton, A. P. Pearce, C. O. Perera, A. Pierce, E. P. Pratt, B. Press, J. Rafalowsky, S. Randall, Grace D. Rice, H. S. Rich, G. D. Robb, J. E. C. Rouse, A. T. F. Rowley, T. A. Seeking, R. Sellick, D. G. Shields, J. R. Smith, J. S. Spickett, A. A. Spiro, E. F. Stead, G. H. Steele, J. S. Symons, Catharine F. Taylor, G. Taylor, Henrietta Trend, Joan W. Urwick, K. H. Uttley, J. M. van Schalkwyk, Y. S. Wan, E. C. Warner, R. L. Waterfield, M. A. Weisman, W. S. Whimster, R. M. Windeyer, K. K. Wood, J. Wood, H. M. Woodman, and H. C. Wykerd.

Diplomas.

Diplomas in the undermentioned subjects were granted, jointly with the Royal College of Surgeons of England, to the following candidates:

Diploma in Public Health.—J. V. Armstrong, Amarnath Bajaj, Bal Mokand, E. M. Bergheim, E. R. W. Gilmore, Audrey M. Hughes, J. A. Kerr, J. H. M. Lloyd, Marian Lones, H. L. Oldershaw, Ethel B. Poole, Gian Singh, L. H. D. Thornton, J. G. Walker, and Moreen Whelton.

Diploma in Tropical Medicine and Hygiene.—Bal Mokand, J. N. Banks, A. Blair, J. H. Bowyer, H. H. Brown, E. N. Cook, A. C. Craighead, N. E. Goldsworthy, T. S. Goodwin, P. F. A. Grant, A. N. Haworth, L. H. Henderson, S. Khan, R. A. E. Klaber, K. Lumsden, J. R. Maleri, J. S. E. Manley, A. S. Mohammed, H. J. More, J. W. Scharff, E. B. Struthers, and J. L. Stuart. (All the above were students at the London School of Hygiene and Tropical Medicine.)

Sir Wilmot Herringham, K.C.M.G., M.D., was re-elected as Representative of the College on the Senate of the University of London.

Dr. William Gordon was nominated to represent the College at the Congress on Thalasso-Therapeutics at Arcachon, France. Dr. Raymond Crawfurd was elected Registrar of the College. A report from the Committee of Management was received and adopted, also the quarterly report of the examiners for the licence on the examinations held in January last. The report of the Committee on Regulations for the Membership Examination was received and was in part referred back for further consideration. Books and other donations to the library presented during the last quarter were received.

The President then dissolved the comitia.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—T. A. Lazaro, I. H. Mackay, K. E. R. Robertson, F. Smith (Section I), P. W. Tobin.

MEDICINE.—E. H. Boodrie, F. Carroll, T. G. L. Davies, C. M. Moody, A. B. Osbourne, J. Wilson.

FORENSIC MEDICINE.—F. Carroll, P. H. Knowles, C. H. Mason, A. B. Osbourne, O. W. Percival.

MIDWIFERY.—R. V. Cookes, B. Horwitz, T. McD. Kellough, P. H. Knowles, C. S. Netscher, W. I. Pierce, S. R. G. Pimm, G. E. Rowan, B. L. Steele, R. F. Stubbs, P. W. Tobin, D. Winstanley.

The diploma of the Society has been granted to Messrs. E. H. Boodrie, T. McD. Kellough, C. M. Moody, B. L. Steele, R. F. Stubbs, J. Wilson.

Obituary.

DR. ARTHUR BANCKS PROWSE died at Clifton on April 26th in his 70th year. He was the son of Dr. William Prowse and grandson of Dr. James Prowse, who practised in St. James Barton. He received his early education at Amersham College, and subsequently became a student at the Liverpool School of Medicine, and St. Mary's Hospital, London. He took the diplomas of M.R.C.S.Eng. in 1877 and F.R.C.S. in 1882, graduated M.B.Lond. with honours in medicine, forensic medicine, and obstetric medicine in 1878, and proceeded M.D. in 1881. He was appointed assistant surgeon to the Bristol Royal Infirmary in 1883, and in 1888 succeeded Dr. W. H. Spencer as physician, a post which he held until 1919, when he retired and was appointed honorary consulting physician. Dr. Prowse served for seventeen years as a lecturer on materia medica, pharmacology, and therapeutics in the Bristol Medical School, and was honorary financial secretary on the occasion of the Annual Meeting of the British Medical Association at Bristol in 1894. He was appointed to the command of the 2nd Southern General Hospital in 1919, with the rank of lieutenant-colonel R.A.M.C.(T.).

Dr. ARTHUR STORRS, who died at Capri on February 6th, received his medical education in Edinburgh and McGill Universities. He graduated M.D.McGill in 1876, and received the Edinburgh diplomas L.R.C.P., L.M. 1879, and the M.R.C.P. in 1882. A colleague of very long standing (A. D. W.) writes: We were both born and brought up in the Annapolis Valley, Nova Scotia, in sight of the Minas Basin of the Bay of Fundy, his father being rector of a parish near the famous Arcadian village of Longfellow's *Evangeline*. He was educated at Horton Academy and King's College. We studied medicine together at McGill University, and both came home and settled in practice on this side of the Atlantic—he in England and I in Scotland. From Barnsley he went to practise at Mexborough, and afterwards in Southport; three years ago he retired to Bovey Tracey, Devon. His work as a practitioner of medicine would have rejoiced the heart of the late Sir James Mackenzie; he was so precise and methodical, so anxious and exact in diagnosis, so careful of every interest of his patient, and so skilful in treatment. He was a connoisseur in old china, and croquet was his favourite recreation. He only allowed himself a brief summer holiday, often choosing to spend it among the Scottish Highlands. His first wife, for many years an invalid, died not long after he retired. In October last he set out, after his marriage with Mrs. Romilly of Southport, for warmer climes, hoping to accomplish a long desired visit to Palestine. At Cannes he contracted a slight chill, which at Capri developed into bronchopneumonia, of which he died. The remains were brought to England and buried at Bovey Tracey. He leaves his wife and many friends to mourn his loss.

Dr. HERBERT LAVINGTON EVANS of Goring-on-Thames, who died on April 9th after a short illness, aged 65, was educated at Clifton College, Edinburgh University, and Guy's Hospital Medical School. He graduated M.B., C.M.Ed. in 1887. After serving as clinical assistant at the Bristol Eye Hospital he settled in practice at Goring some thirty-six years ago. He was assistant medical inspector of schools, medical officer and public vaccinator for the No. 2 District of the Bradfield Union, and medical officer to the Post Office. In his earlier days Dr. Evans was a fine athlete, and during three seasons played for Scotland in international Rugby football matches. He was a member of the Reading Division of the British Medical Association.

Dr. HENRY TRENTHAM MAW, who died at Westcott, near Dorking, on April 23rd, aged 58, was educated at Repton and Christ's College, Cambridge, and studied medicine at St. Bartholomew's Hospital. He took the diplomas of L.R.C.P. and M.R.C.S. in 1892, graduated M.B., B.Ch.Cantab. in the following year, and proceeded M.D. in 1896. He served as house-surgeon at the Leeds General Infirmary and the Hospital for Sick Children, Great Ormond Street, and resident medical officer at the Royal Hospital for Diseases of the Chest, City Road. He had been a partner in the well known firm of Messrs. S. Maw, Son and Sons, Ltd., since 1901, and became chairman of the board of directors on the death of his brother, Mr. C. T. Maw, in 1918.

Dr. ALEXANDER CHRISTY WILSON, who died at Doncaster on April 27th in his 80th year, was the son of Mr. Walter Wilson of Hawick. He received his medical education at the University of Edinburgh and in Paris, took the diploma of L.R.C.S.Edin. in 1866, graduated M.B., C.M.Edin. in 1867, and proceeded M.D. in 1870. After holding resident posts at the Edinburgh Royal Infirmary, he settled in practice at Doncaster some fifty-five years ago. For over forty years he was an honorary surgeon to the Doncaster Royal Infirmary, and on his retirement was appointed consulting surgeon. He was a member of the Royal Medical Society of Edinburgh, and had served as president of the Leeds and West Riding Medico-Chirurgical Society and of the Yorkshire Branch of the British Medical Association. In 1923 he and his wife celebrated their golden wedding. He is survived by his widow and two sons, both of whom are members of the medical profession.

Dr. ARTHUR HEFFTER, director of the Institute of Pharmacology in Berlin, and author of various works on pharmacology and toxicology, has died at the age of 65.

Dr. SIDNEY ALRUTZ, director of the Institute of Experimental Psychology at Upsala, and well known for his investigations on the sensibility of the skin, has recently died.

Dr. GIUSEPPE RUGGI, formerly senior surgeon to the Ospedale Maggiore, Milan, and one of the pioneers of Listerism in Italy, and Dr. GAETANO GAGLIO, professor of pharmacology in the University of Rome, and author of a well known treatise on pharmacology, have recently died.

M. ALEXANDRE MALOINE, the well known Paris medical publisher and bookseller, has died at the age of 76.

Medical News.

DURING his visit to Sierra Leone the Prince of Wales made an inspection of the Sir Alfred Lewis Jones Tropical Research Laboratory. This branch of the Liverpool School of Tropical Medicine was built after the war out of funds bequeathed by the founder of the Liverpool School of Tropical Medicine. Sir Alfred Jones, aware of the handicap to commercial development caused by the diseases of tropical West Africa, wished that research institutes for the study of such diseases should be established in places where these diseases are rampant; Sierra Leone was the first locality chosen by him. His Royal Highness with his staff visited the laboratory on April 7th and was met by the Director, Professor B. Blacklock, with Mrs. Blacklock, Dr. Gordon, assistant director, and Dr. Macdonald, research assistant. A series of exhibits was shown, illustrating the life-histories of insects and parasites.

THE appeal on behalf of the British Institute of Radiology, to which we referred on November 8th, 1924 (p. 872), has resulted in a sum of £1,680 being received up to April 10th, of which £238 was definitely allocated to the Reid Memorial Fund. This sum has been mainly contributed by radiologists, and, in order that the total amount required (£6,000) may be obtained, it will be necessary for the general public, as well as members of the medical profession other than radiologists, to co-operate.

PROFESSOR ELLIOT SMITH will deliver a lecture, with lantern illustrations, on "The Taungs skull—missing links" at University College, London, on Friday, May 22nd, at 5.30 p.m. The proceeds from the sale of tickets will be devoted to the St. Christopher's Working Boys' Club, which is largely maintained and organized by the students and staff of University College. Particulars can be obtained by sending a stamped addressed envelope to Miss Husbands, University College, London, Gower Street, W.C.1.

THE annual oration before the Medical Society of London will be delivered by Sir William Hale-White, K.B.E., M.D., on Monday evening next, May 11th, at 9 o'clock. The subject is "The medical career of John Keats." The president, Dr. Eustace M. Callender, C.B.E., will receive Fellows and guests at 8.30 p.m., and the oration will be followed by a conversazione.

THE next dinner and smoking concert of the Cambridge Graduates' Medical Club will be held at the Langham Hotel, Portland Place, W.1, on Wednesday, May 27th, at 7 for 7.30 p.m. The president of the club, Sir Humphry Rolleston, Bt., K.C.B., P.R.C.P., Regius Professor of Physic in the University of Cambridge, will take the chair. The price of the dinner, exclusive of wine, is 10s. 6d. The honorary secretary is Mr. W. H. C. Romanis, F.R.C.S., 31, Harley Street, W.1.

THE dinner of the Queen's University Club, London, will be held at the Connaught Rooms, Great Queen Street, on Thursday, May 21st. Among the guests will be Lord Carson, Mr. Winston Churchill, and Sir John Ross, formerly Lord Chancellor of Ireland.

THE annual dinner of the Harveian Society of London will be held at the Connaught Rooms, Great Queen Street, on Thursday, June 11th, at 7.30 p.m.

THE next quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will be held on Thursday, May 21st, at the house of the Medical Society of London, at 2.30 p.m., when Dr. J. Shaw Bolton will deliver the Maudsley Lecture, entitled "Mind and Brain."

TWO Chadwick public lectures (illustrated with epidiascope and lantern slides) will be given in London this month by Dr. Emile Brumpt, professor of the Faculty of Medicine in the University of Paris. The first, on how to conduct an antimalarial campaign, will be delivered in the Barnes Hall, Royal Society of Medicine, 1, Wimpole Street, W., on Monday, May 25th, at 5.15 p.m., with Sir William J. Collins in the chair. The second, on the prophylaxis of sleeping sickness, will be delivered in the lecture room, Royal Society of Arts, John Street, Adelphi, W.C., on Friday, May 29th, at 5.15 p.m., with Sir James Crichton-Browne in the chair. Immediately preceding Professor Brumpt's first lecture the Chadwick Gold Medal and Royal Air Force Prize of £100 will be presented to Wing-Commander Harold E. Whittingham, who during the past five years has specially assisted in promoting the health of the men of the Royal Air Force. This award is made in accordance with the scheme of the Chadwick Trust, upon the nomination of the Director of Medical Services, R.A.F.

THE London (Royal Free Hospital) School of Medicine for Women has purchased 6½ acres of freehold land at Sudbury for a sports ground for the students of the school.

THE Fellowship of Medicine announces that on May 12th, at 5.30 p.m., Mr. J. P. Lockhart-Mummery will lecture at No. 1, Wimpole Street, on the diagnosis and treatment of internal piles. From May 18th to 29th the London Temperance Hospital will hold a course for general practitioners; a clinical demonstration will be given at 4.30 p.m., followed by a short lecture at 5.30. A course in psychological medicine at the Maudsley Hospital began on May 4th. The Central London Throat, Nose, and Ear Hospital will hold a special course from May 11th to 30th, consisting of clinical demonstrations with out-patient clinics and ward rounds; an operative surgery class will also be arranged. From May 18th to the end of the month there will be a special course at the Infants Hospital, consisting of lectures, out-patients' clinics, "round table" consultations, and visits to four different centres outside the hospital. There will also be a two weeks' course in dermatology from May 18th at the Hospital for Diseases of the Skin, Blackfriars; instruction will be given in the out-patients' department from 2.30 p.m., with a special demonstration on selected cases on May 19th, together with venereal clinics twice weekly. There will be courses in June at the Victoria Park Hospital for Diseases of the Heart and Lungs, the Chelsea Hospital for Women, the London School of Hygiene and Tropical Medicine, the London Lock Hospital, and an intensive course at the London Temperance Hospital and associated hospitals. Full particulars of these courses may be obtained from the Secretary of the Fellowship of Medicine at No. 1, Wimpole Street, W.1.

THE party arranged by the Inter-State Post-Graduate Assembly of America, which is to visit this country in June under the leadership of Dr. Charles Mayo, will spend the first week in London, where it will visit a large number of hospitals and medical institutions. The Duke of York will attend the opening ceremony on June 2nd. On June 2nd there will be a garden party at the London Hospital, when Dr. Charles Mayo will present the prizes to students. On June 3rd there will be an evening reception at the Royal Society of Medicine, and on June 4th a garden party at St. Bartholomew's Hospital. On June 5th there will be an afternoon reception at the Royal College of Surgeons, and on the evening of the same day Dr. Mayo and the members of the advisory committee of the Inter-State Post-Graduate Assembly of America will give a dinner at the Guildhall. On the afternoon of June 6th a garden party will be given at Crewe House by H.E. the American Ambassador and Mrs. Houghton, and in the evening of that day Dr. Mayo will be entertained to dinner by the Section of Surgery of the Royal Society of Medicine. The party will afterwards visit Manchester, Liverpool, Leeds, Dublin, Belfast, Glasgow, Edinburgh, and Newcastle, and will then proceed to Paris.

THE Board of Education has issued a revised form of the report in connexion with the medical examination of mentally deficient children (Form 306 M, or Schedule F, of the Board's Revised Model Arrangements). Local authorities will be permitted to use alternative forms, provided that such forms are so constructed as to include the same information as in the new form. The Board has also issued a revised form of report or use by head teachers in the case of children whose education is retarded (Form 41 D), certain recognized tests of scholastic attainments, reprinted from Burt's *Handbook of Tests for Use in Schools*, being incorporated in it. Certificate forms (311 M and 312 M) have now been provided for the purpose of reporting to the local authority cases in which a child is an idiot, imbecile, or moral imbecile.

SIR GILBERT WHEATON FOX of Liverpool bequeathed £2,000 to the Liverpool Royal Infirmary, £1,000 each to the Royal Southern Hospital, the David Lewis Northern Hospital, the Stanley Hospital, and the Birkenhead Borough Hospital. Miss Mary Russell of Manchester, who left estate of the gross value of £60,618, with net personalty £60,525, directed that after the fulfilment of a number of personal legacies the residue of the property is to be divided between the Christie Hospital Cancer Pavilion and Home, St. Mary's Hospitals, Manchester, the Manchester Royal Infirmary, the Manchester Eye Hospital, the Salford Royal Hospital, and the Royal National Lifeboat Institution. Sir William C. Gray of Bedale, Yorks, who died in November last, bequeathed £5,000 to the Hospitals Trust of the Hartlepools and £2,000 to the Victoria Homes, West Hartlepool.

THE Cambridge University Press announces for early publication Volume XIX of the Royal Society's *Catalogue of Scientific Papers*, covering the letters T–Z during the years 1884–1900.

THE fifth Northern Surgical Congress will be held at Copenhagen, under the presidency of Professor Rovsing, from June 25th to 27th, when the following subjects will be discussed: treatment of acute osteomyelitis and its sequelae; non-tuberculous disease of the adnexa; tuberculosis of the kidneys and urinary tract. The general secretary is Professor P. Bull, Incognitogade 26, Oslo, Norway.

IT is proposed to erect a new nurses' home in connexion with the Elizabeth Garrett Anderson Hospital at a cost of £15,000 as a memorial to the ninety-seven members of the Overseas Nursing Services who died in the war. A reception will be held by the Dowager Marchioness of Dufferin and Ava, chairman of the Memorial Fund, in the Conference Hall, Wembley, on May 23rd, at 3.30 p.m. Subscriptions should be sent to her at the Elizabeth Garrett Anderson Hospital, 144, Euston Road, N.W.1, and further information can be obtained from the Secretary, Overseas Memorial Committee, at the same address.

A SYMPATHETIC obituary notice of Sir James Mackenzie, with a portrait, appears in *Il Policlinico* of April 20th.

A COURSE of instruction in diagnosis of diseases of the heart will be held at Nauheim from May 25th to 30th. Further information can be obtained from Dr. Gabriel, Zander Institut, Nauheim.

A CONGRESS of physiotherapy will be held at Leningrad, under the presidency of Professor A. S. Brustein, from May 23rd to 27th, when the following papers will be read: heliotherapy, by Professor Brustein; ionotherapy, by Professor S. B. Vermel; physiotherapy of arthropathies, by Professor A. L. Polianov; physiotherapy of endocrine disturbances, by Professor G. Mezernizky.

THE volume of the report on the Census of England and Wales (1921), dealing with dependency, orphanhood, and fertility, was issued on May 7th. It contains 252 pages of tables, 230 of them relating to dependency, including particulars of the numbers and sizes of families of children under 16 years. Its price is £1 10s.

THE Royal Society will give its first conversazione for this year on the evening of Wednesday next, May 13th.

THE medical faculty of Copenhagen has offered a prize of 5,000 kronen for the best critical study of the modern surgery of the sympathetic nervous system.

Letters, Notes, and Answers.

ALL communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, 429, Strand, W.C.2.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Matter intended for the current issue should be posted so as to arrive by the first post on Monday, though in special circumstances urgent communications can usually be received on Tuesday morning.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager, 429, Strand, W.C.2. Attention to this request will avoid delay.

The ***TELEPHONE NUMBER*** of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is *GERRARD 2630* (Internal Exchange).

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The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

"X" writes: I have a patient who has the greatest dread of thunderstorms. Can any reader suggest a plan for giving relief?

"BORNEO" writes: I have a patient who is not a true "bleeder," but who, on having three teeth extracted, nearly bled to death. That is fifteen years ago. His teeth are now in a very bad state and should all be extracted. What is one to do to prevent recurrence of the bleeding?

THE TREATMENT OF FIBROSITIS.

DR. R. CHALMERS (Darlington) asks for information as to the dose of tribasic potassium phosphate recommended by Dr. Ellis during the discussion on the nature, prevention, and treatment of fibrositis, reported in our columns on March 14th (p. 509). The dose is not given in any book of reference to which we have access, but Dr. Ellis informs us that it should be 2 grains and upwards, according to results. It may disagree and produce general discomfort. It is contraindicated in "alkaline thin gastro-neurasthenic cases." Dr. Ellis adds that the drug should be given carefully; he has gone as high as 10 grains three times daily, but very rarely.

RELAPSE IN MEASLES.

"G. P." asks: Is there such a thing as a relapse in measles? I can find no reference in the textbooks. Three sisters had typical measles recently; seventeen days later the eldest girl again came out in a typical measles rash, with slight elevation of temperature, injected eyes, and cough. Can this be a true relapse, and must the quarantine period be again extended?

*** We find the following references, but they leave the final question unanswered:—Allbutt and Rolleston's *System of Medicine*: "It has sometimes been asserted that relapse is of common occurrence in measles, but it seems clear that a true relapse is a very rare event. Some of the cases quoted as examples of relapse are really instances of irregular development of the rash; others rest, apparently, upon an error of diagnosis—the first or the second eruption being in reality that of German measles." Osler and McCrae's *Principles and Practice of Medicine* (ninth edition): "Relapse is occasionally seen, the symptoms recurring at intervals from ten to forty days; but it is not always easy to say whether there may not have been new infection from without."

LETTERS, NOTES, ETC.

EASY WRITING AND HARD READING.

WE are indebted to Dr. C. O. Hawthorne for the following postscript to the note under this heading (April 25th, p. 812), in which he quoted from Moore's *Life of Sheridan*, where it is stated to be quoted from *Clio's Protest*:

I think I have run the couplet to earth. In the form I sent it to you it appears, as stated, in Moore's *Life of Sheridan*, but the page is not 155 but 55. Further, the couplet is quoted alone—I mean without its context. *Clio's Protest* is a topical or personal set of verses apparently intended to scarify a certain "poetaster," and it includes references to a number of persons indicated by initials or by an initial and dashes. Probably no one could now interpret the references, and I take it that this limited interest of the *Protest* explains the exclusion of the lines from volumes offered as *The Works of Sheridan*. They appear, however, together with other odd verses, in two different volumes which I have seen at the British Museum. But there is a disappointment. The full-blooded vigour of "d——d hard reading," as you quoted it, was somewhat reduced in the lines of the *Life*: it became "curst hard reading." A still milder tone marks the original (Thomas Moore did not quote it correctly): it runs "vile hard reading." I have a suspicion that somewhere in Macaulay the "d——d hard reading" may be found, but I cannot turn up the reference. I now send the lines and the immediate context, and plainly they bear out the interpretation you have placed on them:

> "If in my strictures I've been free
> —You know the Muse's liberty.
> Howe'er I'll make all matters equal
> By wholesome council, in the sequel.
> And first leave *Panegyrick*, pray;
> Your genius does not lead that way;
> You write with ease to show your breeding,
> But *easy writing's* vile *hard reading.*"
>
> From *Clio's Protest, or the Picture Varnished.*

TO RELIEVE PAIN IN BURNS AND SCALDS.

DR. W. F. MOORE (Kingsbury, Tamworth) writes to recommend as a simple and effective application for pain in burns and scalds equal parts of linseed oil and lime water, with the addition of half an ounce of tincture of opium to each eight ounces. This, he says, stops the pain quickly and is excellent treatment during the painful stage in very severe and very extensive burns. Later he applies an antiseptic, such as boric acid ointment.

ERRATUM.

IN the report of the discussion on puerperal sepsis at the Congress of Obstetrics and Gynaecology, published on May 2nd (p. 831), Dr. F. J. McCann is reported to have expressed the opinion that "puerperal general infection" would be a better term than "puerperal sepsis." The word "general" was a misprint for "genital." He thought it desirable to retain the word "infection" because it brought home the fact that puerperal infection was comparable with wound infection in general surgery.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *199*.